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CAPITAL, INTEREST, AND DIMINISHING
RETURNS.

SUMMARY.

I. The Ricardian view as a starting-point: advances to laborers, 334.—Are there advances? Clark's view considered, 336.—Do capital goods reproduce themselves, and does their maintenance involve abstinence? Advances to laborers in a complex society, 339.—II. The law of diminishing returns as applied to capital by Carver, 348; by Clark, 350; by Böhm-Bawerk, 352.—Criticism of this view, 353.—Static and dynamic conditions, 356.—The law of diminishing returns and the law of diminishing utility not the same, 360.—Conclusion, 362.

THE debate carried on in the columns of this Journal between Professors Böhm-Bawerk and Clark has raised once again the fundamental questions as to the nature and cause of the return on capital, and its relation to the return for labor.¹ Some phases of these questions I propose still further to consider.

That an increase of capital—the number of laborers and the state of the arts remaining the same—lowers

¹ See the articles by these scholars in the issues for November, 1906, and February, May, and November, 1907. I would add that my own article was completed and put into type before the receipt of that by Professor Veblen in the last issue (February, 1908).

interest and raises wages has been laid down by all economists since the days of Adam Smith and Ricardo. The unsettled problems are as to the mechanism by which these results are brought about, the rate at which the decline in interest takes place, the extent to which capital can continue to increase and still get a return, the conditions on which the past and future of interest depend. There is another problem even more important, and no less unsettled, in the background,—the grounds on which the receipt of interest can be defended as part of the social order. To some of these unsettled problems I propose to give attention.

I.

I will begin by recalling the older view, as outlined by Ricardo himself, and as stated more explicitly by Mill and other followers. According to this, all the operations of capitalists are resolvable into a succession of advances to laborers. Profits or interest (practically the same thing was meant in the earlier terminology by these words) arose from an excess of what the laborers produced over and above what was turned over to them. As we all know, this mode of treating the problem was associated with the wages-fund doctrine. It is not material to the fundamental proposition here under consideration whether the wages-fund doctrine be rejected *in toto* with contempt or whether some elements of truth in it be admitted. The things which are supposed to be advanced to the laborers may or may not be dubbed a "fund" or "wages-fund"; and they may or may not be conceived as predetermined in amount.¹ The essential things are

¹These matters I have considered in my volume on *Wages and Capital* (1896). The substantive conclusions there reached I have seen little occasion to change. On one point, however, not unimportant, I should make a modification. The term "wages-fund" ought to be discarded. Possibly a "wages-flow" might be spoken of without causing misconception; but even this is of doubtful serviceableness, since it suggests a flow of wages distinct from the flow of social income in general.

that laborers are assumed to be hired by capitalists, that the existing possessions of the community are supposed to be the property of a limited number of such capitalists, and that the mechanism by which wages are adjusted is a hiring of laborers by these owners, or capitalists.

There is here, obviously, a close resemblance to the "surplus value" version of the Marxian socialists. In that, also, all gains of the capitalist class—whether considered as one homogeneous mass or classified under the heads of interest, rent, business profits, monopoly gains—arise from a surplus. The socialists go further, and say that no part of this surplus has justification. The strict Marxians, too, maintain doctrines as to the abstract relation of "value" to the labor embodied or applied. These corollaries drawn by the socialists do not bring them into inconsistency or difference with the original proposition; namely, that the source of all capitalist gains is an excess of the product of labor over and above what is received by the laborers.

This proposition seems to me sound. A recognition of it, an acceptance of its consequences, and reasoning based upon it seem to me essential to an understanding of the phenomena.

The grounds on which the proposition itself rests are simple. They are, on the one hand, that production takes time, and, on the other hand, that there is inequality of possessions. These are facts so patent that no proof of them can be needed. The time-using character of highly organized production has been repeatedly dwelt on by writers of all schools, and has been especially illustrated and emphasized in the brilliant exposition of Böhm-Bawerk. The inequality of possessions is a great historic fact, doubtless not in accord with ideals of the best human progress, but to be faced as a characteristic

of almost all developed societies, and not least of modern societies. Resting on it is the other great fact, comparatively modern, of the preponderance of hired labor. Inequality has been somewhat mitigated during the last half-century by some accumulations on the part of hired laborers through savings-bank deposits and the like. But these accumulations are still insignificant as compared with those of the possessing classes. Much the greater part of the property in society is owned by the comparatively small number of the latter. Hence it follows that the support and reward of most laborers during the period of production are secured through advances made (*i.e.*, wages paid) to them by the owners of existing wealth. Recurrently, those owners get into their hands the wealth newly produced, and turn part of it over to the laborers again. They steadily retain for themselves a surplus, which is the source of all capitalistic gains.

At least one fundamental assumption in all this has been questioned. It has been maintained, most explicitly by Professor Clark, that there is no such thing as an "advance" by capitalists to laborers. Before proceeding further, it will be well to consider the objections raised by him.

The only advances made, according to Professor Clark, are by the producers of finished articles to the producers of articles not finished. The producers are represented by him as being in groups A, A', A'', A'''. The group A is supposed to turn out raw materials; group A' transforms that raw material somewhat; A'' brings it still nearer completion; A''' finally "produces" finished or consumable commodity. Now, says Professor Clark, there may be an advance by A''' to the other groups, but there is no other advance. "The whole question whether goods are advanced by one class of persons to another,

in order to tide that other class over an interval of waiting, clearly has reference, not to the relation of capitalists in general to laborers in general, but to the relation of certain sub-groups to other sub-groups in the producing series."¹

Professor Clark here seems to me to confound two essentially different things: on the one hand, the division of labor between different groups of successive producers; on the other hand, the relations of laborers and capitalists to one another in each single group and in all the groups taken as a whole.

The division of labor between different sets of successive producers is a familiar matter. The illustration of the groups A, A', A'', A''' (with the addition, if you please, of other similar groups,—B, B', B'', B''', and so on), fits it perfectly. All this is part of "the roundabout or time-using mode of using labor," to quote Professor Clark himself.² But to suppose, as Professor Clark does, that such a time-using process brings also a "synchronizing" of labors and return seems to me quite erroneous. I find myself in complete accord, on this subject, with what has been said by other critics, notably by Professor Carver³ and more recently by Professor Böhm-Bawerk.⁴ What A''' does is to put the finishing touches on work brought nearly to the stages of completion by the previous labor of A, A', A''. If one wishes to use a method

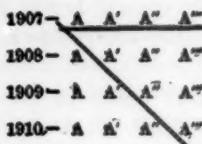
¹ *Distribution of Wealth*, p. 305. I have simplified Professor Clark's illustration by referring only to one series of producers, A, A', A'', A''', as he has himself done at p. 315. The case is the same if there be supposed several series, A, A', A'', . . ., B, B', B'', . . ., C, C', C'', . . ., and finally H, H', H'', . . .; in which case the A group stands for the successive workers on wheat, flour, and bread, the B group for the workers on wool, cloth, and garments, the C group for those on logs, lumber, houses, and the H group finally for those on ore, iron, tools. This more elaborate supposition is made by Professor Clark at pp. 268, 269.

² Page 309.

³ In his review of *Distribution of Wealth* in this Journal, vol. xv., p. 594.

⁴ In this Journal, vol. xxi., p. 266.

of letters and diagrams, the following indicates the actual situation:—



During any one period (say in 1907) all four A's are working simultaneously (say growing wool, erecting spindles and looms, manufacturing cloth, making garments). But the material on which A has worked in 1907 is passed on to A' in 1908. That which A' has partly fashioned is passed on to A'' in 1909. A''' finally gives the finishing touches in 1910. It is not the horizontal line running through 1907 that represents the course of production, but the oblique line that runs through all four periods.¹

Probably Professor Clark would say, with reference to the above illustration, that it really fits into his own view. He would maintain—I trust I am right in interpreting his reasoning—that, when once the preparatory work of A, A', A'', has been done, it makes no difference which order we consider. Both lines—the horizontal and the oblique—show the same series of A, A', A'', A'''. When once the wool has been grown and is in existence, when once the looms and factories are made and ready for use, it is *as if* the present work of A brought an immediate consumable product in the garments to which A''' is now giving the finishing touches.

But it is not *as if*. There are essential differences. There is not, in fact, any "synchronizing" of production

¹ This mode of representation is used in my *Wages and Capital*, chap. I., p. 23. I repeat it here, as the briefest way of stating my opinion.

or any "instantaneous" clothing of the people. The difference appears perhaps most strikingly in another closely related matter, on which again I must differ with Professor Clark; one, too, which brings into view the whole conception of capital and labor. It is the relation of "abstinence" to the genesis of new capital and the maintenance of existing capital.

Elsewhere in his book Professor Clark maintains that "abstinence *originates* new capital," but that, "once the series of capital-goods is created and set working, there is no further waiting to be done." This is because "the keeping up of the series of capital-goods is, in a sense, automatic. The mill, the ship, virtually replace themselves as they are worn out." "Abstinence is confined to the genesis of true capital; none of it is involved in maintaining an endless series of capital goods."¹

This seems to me fundamentally untrue. And the insertion by Professor Clark of the qualifying phrases "in a sense" and "virtually" indicates, as Professor Böhm-Bawerk remarks of their use in other parts of the book, an uneasy sense of the inaccuracy.

Turn again to the set A, A', A'', A'''. In what sense can it be said there is abstinence in the maintenance of the sheep and wool, the looms and spindles, on which A and A' are working? Evidently, in this sense: A''' is turning out in each period enough to supply *all* of them, not only A''' himself, but A, A', A''. These workers in the earlier stages might knock off, and during the whole current period not suffer thereby. We may imagine either that A, A', A'', drop their work completely, leaving A''' to continue, as before, with the finishing touches, or that they help A''' on his finishing work, each of the four

¹ I quote from pp. 133, 134, and from the summary of the chapter at p. xviii.

then doing one-quarter of the usual daily stint, and each being thus enabled to loll or play for three-quarters of the time. The group as a whole, in other words, has its choice: it may either enjoy once for all on easy terms in the present or it may continue to work in the present, and so maintain the machinery of production for sustained enjoyment through the future.

This is precisely what "abstinence" or "waiting" must mean, with reference to a stage when laborers are not hired, but own and use their own tools. The first capital must have been made in spare time; that is, in time which did not have to be given to labor for satisfying immediate wants. There is, then, a choice between idleness (or play) and work which provides for the future.¹ That choice recurrently presents itself as tools wear out and materials are used up. The same choice would recurrently present itself to a collectivist or socialistic community. The whole body of socialists might for a time shorten their hours immensely, almost cease working, by simply using up the stocks on hand and doing nothing but put the finishing touches on the things nearly completed. But if they wish to keep their productive apparatus intact, they must refrain from this presumably agreeable relaxation, and work away at their tools and materials.

Of course, when the first irksome steps in the way of abstinence, or waiting, have once been taken, it is *much easier* to keep the process up. The primal savage who

¹I will not enter on the psychological and anthropological questions whether the very earliest work on tools in fact involved irksomeness and meant a sacrifice. Professor Clark assumes that the original making of capital involves an onerous waiting, and the same assumption has been made by most writers on this subject, including Professor Böhm-Bawerk (see the latter's *Positive Theory*, Book II., chap. iv.) All this very likely is, in Professor Veblen's phrase, "harmless misinformation" concerning the doings of primeval man. For the purposes of the present discussion its accuracy is not material. The only inquiry here is whether the first making of tools and their later maintenance call for radically different operations; and it is on this point that I must differ with Professor Clark.

figures so commonly in representations of these operations surely finds it much easier to replace his canoe when he has got together, by the use of the first canoe, an abundant store of fish. But, tho it is easier, the irksome thing must still be done. He must work rather than bask in the sun. When tools have once been provided, the process both of getting new capital and of maintaining existing capital becomes progressively easier. Labor becomes more productive; the available inflowing supply of consumable goods becomes larger; and less and less sacrifice of immediate relaxation is entailed in giving part of your labor to keeping up your apparatus or in making new apparatus.

When we leave these supposed simple conditions (of workmen owning and using their own tools) and come to the common situation of modern societies, we have a very different state of things to deal with. The farmer who digs his own drainage ditches "abstains" in the manner of the primal savage. But in the ordinary conditions of our complex societies, abstinence, or waiting, is vicarious, so to speak. It is done not by the workmen themselves, but by others who have present means and have the choice of hiring the workmen either for making things immediately enjoyable or for making tools. Professor Clark puts it thus: "Abstinence consists in taking one's income in the form of producers' goods,—electing to take draft horses instead of driving horses, trading vessels instead of steam-yachts, factories instead of pleasure palaces, always as part of the income of the men who do the abstaining."¹

This is true and well stated. But it should be supplemented by adding that the election in the end is between *hiring laborers* to do the one thing or the other. Neither trading vessels nor steam-yachts came into the world ready-

¹Page 134.

made. They are fashioned by labor, and the direction to which the labor is turned rests upon the choice of those who have free income; in other words, on the direction of demand. Freight boats and factories wear out; so do yachts and palaces. Neither sort reproduces itself. Both are made by labor, both can be replaced only by labor. The same abstinence that is involved in the first making of a factory is involved in its remaking.

Take the concrete case of a cotton-mill. The owners know that it will wear out in time. The "life" of the machinery in such a mill is about ten years. At the end of that period it is nothing but scrap-iron. Therefore, the owners put aside every year something for "depreciation"; that is, they do not divide all that they might (say in the form of dividends, if the organization be that of a stock company), but reserve annually so much as will enable them at the end of the ten years to buy another set of machinery. There is nothing to compel them to do so.¹ They may conclude that the business is not likely to be profitable, may wind up the whole thing, and turn over to the stockholders in cash what had been set aside for depreciation. The stockholders then can do as they please. They can reinvest in other directions—that is, cause laborers to be hired in making other capital—or they can "spend" on palaces or yachts; that is, cause laborers to be hired in making things of this sort. The strong probability of course is that the manufacturing corporation will be kept up as a going concern, and that the depreciation fund will be used in buying new machinery to

¹Professor Clark says (*Distribution of Wealth*, p. 133): "The loom in the factory that is worn out and is about to be replaced has, during its career, earned its share of dividends for the stockholders of the mill; and, besides this, *has earned for them a sum that will buy a new loom*. It is not necessary, therefore, to take the cost of the new loom out of the stockholders' incomes. That would impose on them the necessity for a genuine act of abstinence." The italics here are mine. Is this "earned sum that will buy a new loom" necessarily committed to buying a new loom? Must it be reinvested? Has not the stockholder precisely the same freedom as to what he will do with this as he has with his other income?

replace the old. In other words, labor will be turned to making the new machinery. But there is nothing automatic in the process, no certainty of replacement, no difference between the mode in which existing capital is replaced and that in which new capital comes into existence.¹

The substantial difference between Professor Clark's view on this point and my own can perhaps be best indicated by a practical application. Suppose a tax were levied precisely equal to the interest on capital now in existence. Would that capital continue in existence indefinitely? Surely, yes, according to Professor Clark. Existing capital, he says, replaces itself automatically or "virtually." Its replacement, he believes, entails no further abstinence or sacrifice to the owner. Hence he must admit that society could appropriate the whole return without suffering ill results from a diminution of its outfit of capital. To me it seems clear that, since "abstinence" ordinarily entails some degree of sacrifice,—or, to put it in more modern phraseology, since present goods or present income are ordinarily preferred to future goods or future income,—capital would cease to be maintained with the complete disappearance of return on it. This, of course, on the assumption that the régime of private property persists. I will not digress to the consideration of capital and its maintenance in a collectivist society.

The value of a distinction lies in its pointing to propositions which hold good of one of the things distinguished and do not hold good of the other. The particular propositions or conclusions which Professor Clark deduces from his distinction between capital and capital goods seem to me quite untenable,—thus, as to the "synchronizing" of labor and its product, or the replacement of capital

¹I venture to refer on this whole subject to my *Wages and Capital*, pp. 56-63, 67, 225. The subject seems to me very simple.

without abstinence. There may be other conclusions from this sort of distinction, as to the social merit or justification of returns on "capital goods" as distinguished from returns on "capital." I suspect, however, that the conclusions which might be deduced on such social questions would be very different from those which run through Professor's Clark's writings. They would point not to the same justification for all kinds of "capital" (such of course is the drift of Professor Clark's reasoning), but to a discrimination between "capital" and "capital-goods," and to a still further discrimination between those capital goods which are fashioned by man and those agents which are the free gifts of nature. But these are matters not pertinent to the subject of the present discussion. So far as this is concerned, the distinction between capital and capital goods only beclouds the situation, in no way clarifies it.

Let us return now to the question of advances. As the relation of present labor to past labor, and that of abstinence to the making and replacement of capital, presented themselves in different form according as we considered independent or hired laborers, so does the question of advances to laborers present itself differently.

Consider, first, the case where there are independent laborers only, and no employing capitalists. Professor Clark suggests that in the group A, A', A", A"', the last worker, A"', who puts the finishing touches in the series, may possibly be conceived as supporting the others whose work is in the earlier stages, and as making "advances" to them. I should not myself consider such a phraseology apt. A''' of course turns out all the consumable goods, and is their proximate owner. But he must have had the tools and materials which A, A', A", are making. If, indeed, he is richer than the others, and owns once for all

the whole outfit of tools and materials, he is a possible employer and exploiter. But if he is on a par with them, is simply a worker, putting the finishing touches on the half-made or three-quarter-made things which come into his hands for completion, he turns over to the others a proportional part of the consumable goods. Even if there be no conscious sharing, he must buy tools and materials. He *exchanges* part of his bread (suppose this to be the bread-making group) for flour to be baked into more bread, just as the flour-maker exchanges part of his flour for new grain. There is division of labor and exchange within the group. Each of them owns a part of the capital of the group, each contributes to the output; and each will get (if they compete freely and are equal in endowments) the same share of the output. The group as a whole may perhaps be conceived as recurrently hiring all the laborers in the various stages to keep at their work and to maintain the tools and material as well as turn out the completed goods. A socialist community may be described, if one likes that turn of speech, as so dealing with its members.

All this, however, is idle speculation, or at least analysis of hypothetical conditions very different from those of the actual world. The sort of hypothesis which yields good results in economic reasoning is that which conforms to facts,—which only simplifies the facts and strips them of non-essentials. Let us assume the actual situation in modern societies. Suppose that at each stage there are, not independent laborers, owning their own tools and materials in common or severally, but bare-handed laborers, having little or nothing, and employed by capitalists. This of course is the case (stated baldly) in modern societies.

Here the laborers A—those who grow the wool, to vary the illustration—are hired by capitalists. The laborers

who card and spin and weave in factories are hired by other capitalists, those who make up the cloth into garments by others still. *All* the laborers are dependent for the means of livelihood on the bargain they make with the capitalists. This is as true of those who turn out finished garments as of those who tend sheep and shear the wool. Whether or no the garment-maker can be conceived as "advancing" anything to the others if all are independent workmen, they cannot be so conceived when they have no ownership in what they turn out.

I will not weary the reader with elaboration as to the details by which the dealings of employers and laborers are worked out in a complex society. Of course the laborers first get money. They buy with the money some of the enjoyable commodities to which the last touches are being constantly given in the several groups. They buy, for example, some of the garments turned out by the A''' workers in our supposed group. They do not buy all of the garments, for a portion of the workers turn out clothing for the use of the capitalists and their associates. These last become real interest, profits, rent, just as the laborers' clothing becomes real wages. The capitalists make (*i.e.*, hire laborers to make) and exchange among themselves tools and materials. The replacing of tools and materials goes on systematically. Machinery is manufactured, and flax, wool, cotton, are grown. All this takes place not because there is any automatic reproduction, but because the immense majority of the possessing classes are known to be disposed to keep their accumulations intact, and not to turn their all into palaces and pleasure yachts. Some of the laborers work at consumable commodities which are to be capitalists' income; some at consumable commodities which are to be their own (laborer's) income; some at materials and tools in various stages destined to be in part one kind of income, in part

the other. They are all hired by capitalists, either to keep capital intact or to turn out income.

On one point I agree with Professor Clark. When the consumable commodities get into laborers' hands, they are no longer capital, or at least are no longer producers' capital. And I agree, too, that there is no fixed store of such goods stored up in some limbo. The nearest approach to such a store is in the stocks held by retail dealers,—stocks constantly drawn on and constantly replenished. The source from which wages and all incomes are derived is the inflowing stream of consumable goods. If we wish to use figurative language, we may speak of a wages-flow rather than of a wages-fund, or rather of an income-flow. But the mechanism by which this flow is directed toward hired laborers is that of advances by the capitalist possessors who may do as they please with their own.¹

II.

Assuming now that the mechanism of advances by capitalists and production by laborers operates substantially as the Ricardian school conceived it, let us consider some of the possibilities of its operation. More particularly let us consider how far advances by capitalists can be indefinitely increased and a return on capital still be secured. On this subject Professor Clark and some of his critics, such as Professors Böhm-Bawerk and Carver, are very much in accord, at least as to the eventual out-

¹Needless to say, the question whether consumer's goods should also be dubbed "capital" ("consumer's capital," perhaps) does not enter here. I have simply gone with Professor Clark in his views on this subject, which indeed are also in accord with Böhm-Bawerk's. An enlargement or modification of our conception or definition of capital would not affect the present discussion, tho it would raise other and important questions as to the conditions both of demand and supply for capital in the wider sense. Throughout this article I have confined myself to capital or surplus means used "in production"; admitted on all hands, I believe, to be the dominant use in determining interest for modern communities.

come; whereas it seems to me that a considerable qualification of their conclusions is called for.

Let us follow the Ricardian view one step further. If "capital" (meaning thereby the sum total of things used in advances to laborers) and the number of laborers increase *pari passu*, and if the laborers remain efficient or productive in the same degree, the process of investment and hiring can go on indefinitely. Ricardo had always before him, it is true, the prospect of diminishing returns to labor in agriculture; *i.e.*, less productiveness of labor, and hence lowering of the surplus and of "profits." But even without pressure from diminishing returns the sustained accumulation of capital and the consequent increased advances to laborers might bring about a decline in profits. This result would ensue if capital increased faster than the number of laborers, or—to put the case in its simplest form—if capital increased and the number of laborers remained stationary. More would then be turned over to each laborer, the same amount would be produced for each laborer, and the excess or surplus would diminish. If, indeed, improvements were introduced at the same time with the added accumulations and advances, the decline in profits would be arrested. But the mere fact of accumulation had no connection with improvements and no tendency to bring them about.

Many modern writers, however, including both Clark and his critics, maintain more or less explicitly that there is precisely such a connection. More capital serves *per se* to increase the output. The more abundant the equipment of the laborers with tools, materials, and all the apparatus of production, the more they will produce; and therefore there is no limit to the amount with which they can be profitably supplied.

This view is perhaps most unequivocally stated by Professor Carver:—

The productivity of capital is, like that of land and labor, subject to the principle of marginal productivity, which is, as we have seen, a part of the general law of diminishing returns. Increase the number of instruments of a given kind in any industrial establishment, leaving everything else in the establishment the same as before, and you will probably increase the total product of the establishment somewhat; but you will not increase the product as much as you have the instruments in question. Introduce a few more looms into a cotton factory without increasing the labor or the other forms of machinery, and you will add a certain small amount to the total output. . . . One man with two looms would turn out more per man, but slightly less per loom, because there would be a few more stops. One man with four looms would turn out still more per man, but still less per loom, and so on. . . . That which is true of looms in this particular is also true of plows on a farm, of locomotives on a railway, of floor space in a store, and of every other form of capital used in industry.¹

The implication is—it would seem even the express statement—that the mere addition of more instruments and tools causes the output to increase. Supply the farmer with more plows, the carpenter with more saws and planes, the weaver with more looms,—then more grain, more wooden ware, more cloths, will be turned out.

I do not believe this to be the fact. Supply the laborers with more tools *of the same kind*, and there is no reason to suppose that the output will increase indefinitely, or even will increase at all. Let the farmer have a second plow, then three, four, a dozen, and he will accomplish no more. The additional equipment will be so much surplusage. Possibly one extra plow, to be turned to in case the first should need repair, will be worth having; but it is a question whether its occasional use (probably rare) will add enough to offset the loss from its own depreciation. Similarly, the addition of more looms will not in itself enable the weaver to turn out more cloth. Where,

¹ Carver's *Distribution of Wealth*, p. 220.

indeed, *new kinds* of power looms are in process of introduction and trial, there is a problem as to how many can be run to advantage by one weaver. A similar problem arises when weavers of a different degree of intelligence and alertness are being tried. The most advantageous adjustment of the labor supply to a given kind of tool or machine settles itself after such a process of experiment. When once it is settled, the mere addition of more tools of the given kind adds nothing. No one would say that a second, third, fourth, hand loom enables a weaver to turn out more cloth. The same is true of power looms or other machinery, when once things have settled down, and when it has been learned how to adjust labor to machinery,—or, to put it in wider terms, how to adjust present labor to past labor.

Professor Clark lays down the same proposition as Professor Carver, and in terms even less qualified.¹ But he adds that the increase in the quantity of capital is accompanied by a change in its character. "Society pulls down its barns and builds others better as well as larger; it carries its mercantile buildings farther into the air, and makes them fire-proof and durable; it substitutes steel ships for wooden ones and steamers for sailing craft; it takes the curves and grades out of its railroads."² "Qualitative improvement" takes place with the increase in quantity; in other words, there are tools of a different kind.

Both Professors Clark and Carver deduce a general—nay, a universal—principle of diminishing return. In the clear-cut statement of the latter, every increase of capital, the number of laborers being the same, brings

¹ Professor Clark states it as one of the universal laws of economics. "Supply capital in successive units to a fixed force of laborers, and everywhere you get, as a result, smaller and smaller additions to the output. This is a universal law." *Distribution of Wealth*, p. 50.

² *Distribution of Wealth*, p. 184.

an increase of output, but with a diminishing rate of increase. The same doctrine appears in Professor Fetter's *Principles of Economics*.¹

The readers of this Journal will recall Professor Böhm-Bawerk's criticism.² It is that Clark supposes his capital to drop from heaven, so to speak. The same criticism might be directed to Carver's exposition, for in this also capital is spoken of as if it appeared once for all and ready-made. There is no inquiry as to how it comes into existence. Capital must have been made by labor, but there is no consideration of the part played by the labor which made it or of the remuneration got by that labor. Is there a separate product of the capital or only a product of the various sorts of labor which first made the tools and materials and then used them?

The criticism seems to me deserved. In too much of recent economic speculation, capital has been treated as if it were ready-made. I believe that much of the discussion of land and capital, of rent and interest, which runs through the later chapters of Professor Clark's book, and also through the writings of Professor Fetter, rests on a tacit assumption of this sort. Land and capital are treated as if their conditions of supply were the same. "Capital," in the sense in which most of us use that term,—instruments made by man,—involves a sacrifice. In fact, it involves two kinds of sacrifices: labor on the part of the workmen; and "abstinence," or "waiting," or "exchange of present goods for future goods" (which-ever phrase is preferred) on the part of the owners or of those who have hired the laborers. No analysis of capital and interest can probe the problem to the bottom which does not recognize these conditions of supply as to capital. The obvious ear-mark of what we call "land"

¹ Fetter's *Principles*, chap. ix., especially p. 71.

² In this Journal, vol. xvi., p. 262, *seq.*

is, on the other hand, that its conditions of supply are fixed by nature. Hence I agree with Böhm-Bawerk in finding a serious gap in Clark's reasoning. He fails to inquire how capital came into existence, and what is the function, what the source of reward, of the labor that made the capital. And this defect obviously is due to his peculiar doctrine as to the automatic reproduction of capital. If tools, materials, goods in process, "virtually" reproduce themselves, there is no occasion for asking whether and how they came to be made by labor.

But, notwithstanding this important difference, the final result reached by the contending debaters is, after all, very similar, and Professor Böhm-Bawerk's concluding thesis is open to the same criticism as that of Clark and Carver. Böhm-Bawerk's doctrine, it will be recalled, is that, as labor is applied in a different way,—as it is spread over more and more time, with more elaborate steps in previous making of tools and plant, with further and further postponement of the attainment of an enjoyable product,—the final output becomes greater. And there is, in his view also, a tendency to diminishing returns. The longer in time the process is, the greater will be the eventual output of consumable goods. Each extension, however, leads to a less increase than the previous extension. The increase in output due to the last extension determines the return to capital in the way of interest. As this extension in time involves a further postponement of present enjoyment, or a further exchange of present goods for future, it will not take place unless there are eventually more of present goods. The theory of the invariable attractiveness of present goods over future has more than a family resemblance to the old doctrine that "abstinence," or "waiting," is something irksome; while the doctrine of the invariable gain from using present goods as a means of spreading labor

advantageously over time, has again a resemblance to the doctrine of a "productivity" of capital.

Thus, while Böhm-Bawerk's analysis follows the process more faithfully in its details, its outcome is the same. The marginal increase in the productivity of labor spread over time, and the marginal productivity of capital,—these seem to me to come to the same thing in the end. There is agreement as to a far-reaching tendency to diminishing yield, and agreement that the marginal yield settles the rate of return on capital.

My own view is that in its historical significance, whether we look backward or try to look forward, this generalized statement is far too sweeping. More particularly, I believe that the theorem of a general tendency to diminishing return as more capital is used—*i.e.*, as more advances are made to laborers—cannot be maintained.

Taking a cross-section of industry at any given period, I should admit that the marginal "productivity" of capital determined the rate of return on it. Imagine that a community, now in possession of a stock of tools and materials, is compelled to part by successive steps with instalments of this capital. Clearly, it would first relinquish those parts which contributed least to the efficiency of labor, and then, as more and more had to be given up, would relinquish others in the inverse order of their serviceableness. It would reserve to the very last those constituents of capital—that is, those ways of roundabout production—which added most to the efficiency of labor. These ways—the last to be given up, the first to be used, if the community possessed its present knowledge of the arts,—would doubtless be, on the one hand, the agricultural operations which, in the temperate zone, run through the seasons and require something like a year's supply of food materials; and,

on the other hand, the metallurgical processes which yield iron, the prime tool of civilization. And, conversely, such a society, supplied in succession with the means of getting back its present stock of tools and materials, would acquire (*i.e.*, would make with the labor that was available) first the more essential, and then, one after another, those less effective in adding to the productiveness of labor.¹

The gain, or premium, or interest, which will be secured by the owners of the capital in any such supposed stage, will be determined by the least effective or helpful use; or, to use the accurate Böhm-Bawerkian phraseology, by the addition to the enjoyable product of labor which results from the least effective phase of the roundabout or capitalistic process. Those who use capital in the more effective ways cannot permanently retain the superior gain for themselves. All who have capital at command, or the means of getting it made, could turn to the more effective ways. Competition among them will prevent any one set of persons from securing higher gains than the rest. Hence it is the effectiveness of the least productive utilization of surplus possessions (*i.e.*, of capital) which determines the rate of gain for all capital.

But all this marshalling of capital is in the way of cross-section. It arranges the constituent parts of existing capital, as we now know about them, in an order of usefulness. But this order of usefulness is not necessarily, or even probably, the historical order. It would indeed have been the historical order if men had started at the outset with all the knowledge of the arts which they now have. But there is no reason, in my opinion, for supposing that in the past the more effective uses were first turned to, nor that in the future less and less effective

¹This is the sort of case assumed by Professor Marshall, *Principles of Economics*, Book VI., chap. i., § 9, p. 590 (4th edition), § 8, p. 520 (5th edition).

uses will be turned to. Whether we look backward or forward, no general or certain tendency to diminishing returns can be made out.

Let me illustrate my meaning by a consideration of what has happened in the civilized world during the last century or two, say since the middle of the eighteenth century. Suppose there had been during this period, so far as the bettering of capital goes, strictly "static" conditions. Suppose there had been none of the inventions which brought about the industrial revolution and made the modern world,—no steam-engine, no textile machinery, no railways, no steamships, no new iron and steel making processes. Assume, on the other hand, that accumulation had gone on during this long period at the rate which, in fact, has prevailed,—savings and surplus means valued by thousands of millions. Assume that the only thing which could have been done with this enormous mass of surplus means, in the way of bringing into existence more capital ("capital-goods"), had been an increase in the supply of instruments such as were familiar in 1750,—more spinning-wheels, more hand-looms, more broad-wheeled wagons and stage-coaches, more wooden sailing-vessels. Is it not obvious that before long the multiplication of these things would have led to no further gain? The persons who had the large surplus means, and who invested them in hiring laborers to make more and more of the old-fashioned tools, would have been brought very soon to the stage of no further increase in productiveness, of rapid decline in the rate of interest, and, if they persisted willy-nilly in accumulating and investing, complete disappearance of any return at all on their investments. The mode in which these consequences have been staved off is also obvious: it has been by the march of improvement and invention, the discovery of ways of applying labor to making more

elaborate tools than before, to ways of getting eventually a larger product in proportion to the total labor applied. These newly discovered ways have not been less effective than those previously followed. They have been probably more effective. The steam-engine and the railway—to mention two great transforming agents—stand for increasing returns, not diminishing returns.

But it will be said that I am confounding static and dynamic conditions. The proposition as to diminishing returns from an increase of capital, it will be said, holds good only in a static state, whereas during the last one hundred and fifty years the civilized world has been under highly dynamic conditions.

I confess not to be certain as to what is meant by a static state, and suspect that confusion between "static" and "dynamic" conditions appears among those whose reasoning rests on the supposed distinction. Thus Professor Clark speaks of going through an "illustrative dynamic process," and observes that the process by which capital changes its form, as more or less of it is added, "is not a static process."¹ It is not material what phrases are used. It is material only to keep clear just what is the way in which more capital is supposed to be added, and what is the sort of "natural" change that takes place as this is done. Elsewhere Professor Clark says that "every increase of capital shows itself primarily *in transmuting poor appliances into better ones.*"² This seems to me essentially a "dynamic" operation. It is an operation which is assumed by Professor Clark to take place in a "natural" or necessary way, following from the mere presence of more available means,—of more possibilities of making capital. The substitution of steel ships for wooden ones, of power machinery for hand tools, and sundry other improvements, are referred to by him as

¹ *Distribution of Wealth*, p. 178.

² *Ibid.*, p. 183.

taking place simply with the greater abundance of capital. But, in fact, they result not merely from that abundance, but from the irregular march of invention and discovery. To quote another passage,¹ "As capital grows more abundant, . . . society also makes all its machinery as nearly automatic as it can, so that one laborer's guidance shall keep much machinery in motion." "Society," I submit, does nothing of the kind. Individual schemers and inventors are trying to find out how to achieve such results. They may or may not succeed. If they do succeed, they may or may not need more "capital"; *i.e.*, may or may not call for a greater preparatory application of labor in making the automatic machinery.

The "static" state, if we are to use that phrase, means a condition in which the arts are stationary. An increase of capital, in such a state, means an addition of tools and materials of the same kind that were used before. By supposing such a situation, we can reason with some clearness as to what would happen if there were simply an increase of capital, and nothing more. We isolate that factor hypothetically, after the familiar practice of deductive reasoning in economics. I have already stated my belief that in such a static state the mere duplication of instruments of the same kind would lead to practically no increase in productivity. This much indeed is implied in Professor's Clark's supposition that with the changes in quantity of capital there are also changes in quality. The changes in quality would not need to be assumed if mere addition of quantity brought an indefinitely continuing gain. The essential point on which I differ is as to the regularity or predictableness of the changes in quality. These changes seem to me, in fact, very variable and subject to no certain law.

In Professor Böhm-Bawerk's treatment of this subject

¹ *Distribution of Wealth*, p. 184.

the form of statement is more guarded. The greater efficiency of the roundabout process is said to be a fact of general experience, very possibly subject to exceptions. Similarly, the tendency to diminishing returns as to the process becomes more roundabout, is set forth not as a "natural" law, but again as an empirical fact. Yet in the later development of his reasoning the acute Viennese thinker seems to me to forget the nature of the premises from which he starts. All his ingenious numerical illustrations (which remind one of Ricardo's illustrative figures) are worked out on the assumption of an increase of efficiency that goes on steadily, yet at a diminishing rate. This may be done, very properly, for the purpose of precision in the hypothetical reasoning, just as Professor Clark's figures may be justified as precise statements of a hypothesis. But Professor Böhm-Bawerk, not less than Professor Clark, draws substantive conclusions of importance. Interest, the former says, *must* appear; for there is always the possibility of using present goods as a means of extending the production period.¹ In other words, no matter how great the accumulation of a general subsistence fund, or, in less technical terms, no matter how great the volume of means pressing for investment, a return in the way of interest can always be secured. Stated in such unqualified terms, the proposition seems to me untenable.

Let me say something more as to the possibilities of an increasing use of capital. To prove that those possibilities are indefinitely extensible, reference is made to the many unused opportunities for applying capital which lie about on every side. There are, it is said, known and perfected devices, as yet only in partial use, to which new accumulations can be directed with clear advantage.

¹ *Positive Theory*, p. 333. See also pp. 377-378, and Chapters I., II., III., of Book VII., *passim*.

Here is a field virtually unlimited, tho one in which further exploitation must face the probability of diminishing returns.

Much of this is true of such a highly "dynamic" state as the world is now in. Inventions and improvements are not adopted by all producers at one fell swoop. They make their way step by step, first adopted by one person then by another, and come into use over the whole field by a gradual process. Professor Clark has effectively pointed out that a characteristic source of employer's profits is in the shrewd appreciation and early adoption of improvements. During the period when they are in process of adoption, very likely a long period, there are these visible and certain ways of applying new accumulations to advantage. If there be a succession of improvements, each new one opens such a vista, and at every instant of time there are unused opportunities for productive investment. Precisely this is what we have seen during the last one hundred and fifty years. We are living in the midst of the greatest burst of invention the world has ever known, one, too, which shows no signs of subsiding. So far as we can see into the future,—that is, for a generation or thereabouts,—there is no indication of any relaxation of the advance in the arts. It may be, as the more optimistic predict, that we are only on the threshold of further great conquests of natural forces. These conquests during the last century have involved more and more plant, and thus have involved more capital. They seem likely to do so for the immediate future, tho in what degree and with what certainty or regularity we are quite unable to say.

But these, after all, are the incidents of a period of transition. If we conceive the transition to be completed,—the current improvements to be applied universally,—then we reach the stage at which we can judge whether

there are unlimited opportunities for investment, unlimited possibilities of increasing the product, merely by adding more instruments of the kind already in use. Then we have the "static" state, and the naked question whether mere increase in the increments of capital (Clark's phrase) or mere extension of the production period (Böhm-Bawerk's phrase) serves to add to the output. To that question the answer, it seems to me, should be in the negative: whereas the question as to what may happen in the dynamic state—when there are "qualitative" improvements or advances in the arts—is not susceptible of such clear-cut answer as both thinkers seem to suppose.

One sort of limitation of the possibilities of using capital must not be overlooked. There are obstacles to the spread and utilization of known improvements which make many of them practically unavailable for great parts of mankind. The use of modern agricultural machinery by the peasants of British India would greatly increase the productiveness of their labor. Were they able to use it well, they could afford to pay handsome interest to those providing it. But lack of intelligence and education, all the rooted conditions of a primitive social state, make this application of capital out of the question. The American traveller in many parts of Europe sees unbounded opportunities for using labor-saving appliances. But, so long as the people are not ready to turn to them, there is here no opening for investment. A change in the intelligence and skill of a great mass of mankind is as much a "dynamic" operation as is the invention of a new mechanical process.

One other aspect of this supposedly far-reaching law of diminishing returns deserves attention. It is sometimes spoken of as if it were but a phase or application

of the general theory of value. Successive increments of any one commodity have diminishing utility and declining exchange value. Diminishing returns on capital are supposed to result directly from the diminishing utility of commodities, the first-named principle being simply the result or manifestation of the second-named.¹

These two tendencies, or laws, seem to me entirely different. In the one case we have to deal with the utilities and the values of the several units of quantity: in the other we have to deal with those units of quantity themselves,—with physical units. The law of diminishing returns as to land, so often referred to as the type and proof of the wider theorem, neither says nor implies anything as to utilities or as to value. It says only that more and more labor (capital also, if you choose to think of capital as something different from labor) applied to a given area does not remain continuously productive at the same rate; and the productiveness of the several doses is measured in terms of bushels of wheat or tons of hay, not in terms of value. Measured in terms of value, it is by no means necessarily true that there is any tendency to diminishing returns as to land. The smaller quantity of wheat or hay which accrues from the last dose of labor on the land will very likely have not less value, but the same value as preceding products of the same labor. Similarly, the problem as to the increase of return due to added doses of capital is one of quantity. Will more wheat, more cloth, more shoes, be got by making and using more tools or more elaborate tools? The law of diminishing utility, on the other hand, bears on the utilities or satisfactions derived from added units of the same commodity, and so on the *relative* value of the several

¹"Diminishing returns of indirect agents is a special case of the diminishing utility of goods." Fetter's *Principles of Economics*, p. 71. Professor Clark does not seem to hold this opinion; for in his recently published *Essentials of Economic Theory* (p. 56) he refers to the one law as parallel to the other, not identical with it.

products. It thus affects the distribution of labor and capital towards the making of more or less of each product. The one principle has to do with the relative value of different commodities and with the income of satisfactions ("psychic" income) which mankind gets from its exertions. The other has to do with gains in physical quantities, and with the variations in such gains—whether at an increasing, a decreasing, or a stationary rate—from different ways of applying labor.

Returning now to the question as to the law of diminishing returns for successive increase of capital, I may sum up my conclusion by saying that the view which maintains this law seems to me essentially historical, and in that sense unreal. Successive increases of instruments *of the same kind* lead to no increase of return: they bring mere surplusage. The addition of instruments of a different and better kind—what Professor Clark calls qualitative increase—obeys no law. It is dependent on the progress of invention, and its course is irregular and unpredictable. If we have a steady increase of capital of the first kind,—quantitative only,—the return to capital will soon disappear. If we have a steady increase of the qualitative kind, there is no telling whether the addition to the total output, and so the return in the way of interest, will be at a steady rate, an increasing rate, or a diminishing rate.

The mind of man strives for generalization. It seeks to arrange phenomena in law or regular sequence. To this striving, I suspect, is due the attempt to formulate a universal law of diminishing returns. The attempt is like that to reach sweeping generalizations in history or politics, or—to come closer to the sphere of economics—that to find far-reaching or universal laws of economic development. In fact, the phenomena are not susceptible

of such clear-cut generalization; or at least we do not know enough about them to perceive clearly any underlying general forces. We must content ourselves with learning as much as we can of the irregular forces and the puzzling facts, and with stating our conclusions often in hypothetical terms. *If* an increase of capital (or a spreading of labor over more time) always brings a greater output, interest will continue, however great the increase of capital. *If* such an increase always brings a greater output, but at a diminishing rate, interest, while it will continue, will tend to be lower and lower in rate. *If* an increase of capital brings no greater output at all, and if none the less it takes place regardless of consequences, it will lead infallibly to the complete disappearance of interest. In some such forms as these we can state conclusions with sharpness of outline. But just in what way the increase of capital will in fact take place,—what will be the march of invention and discovery,—on this we are not able to forecast the future or the working of the productive forces in the future.

F. W. TAUSIG.

ADMINISTRATIVE SUPERVISION OF RAILWAYS UNDER THE TWENTIETH SECTION OF THE ACT TO REGULATE COMMERCE.¹

SUMMARY.

The twentieth section in the Act of 1887 was ineffective, 364-365.—Three provisions in the amended section: monthly reports, uniform accounts, special examiners, 365-367.—Operating and capital accounts, and their new supervision, 368.—The four principles underlying the Commission's accounting scheme, 370.—Discount on securities not to be carried as an asset, 370.—Depreciation and betterments accounts regulated, 371.—Surplus to be accurately stated, 372.—Industrial importance of the scheme: greater stability in railway securities, 372-376.—Clarifies relation of rates to cost, 376-377.—Wider influence of confidence in railway accounts, 377-379.—Conclusion; administrative supervision, rather than procedure in the courts, initiated by this regulation of accounts, 379-383.

THE twentieth section of the Act to regulate Commerce was regarded as an important feature of the original law passed in 1887, but its significance has been greatly increased by the amendments contained in the Act of June 29, 1906. For students of transportation, and especially for students who regard the problem of transportation as primarily a problem in political and industrial organization, the chief interest in a consideration of this section of the act arises from the fact that in the twentieth section is found a definite, altho an incomplete, expression of the principle of supervisory administration.

For an intelligent understanding of this point of view it will be necessary to describe somewhat in detail the task undertaken by the Interstate Commerce Commission, acting upon the authority conferred by the twentieth section of the Act to regulate Commerce, as amended.

¹Prepared from notes of an address before the Seminary of Economics at Harvard University.

This section under the old law provided that an annual report, covering specifically defined items, should be filed by the carriers. It also stated that the Commission might, within its discretion, prescribe a uniform system of accounts for all carriers subject to its jurisdiction. No provision was made, however, for the enforcement of such orders as the Commission might make relative to reports or to accounts, except by the tedious process of a case in equity. From 1887 to the present time the twentieth section of the Act to regulate Commerce has been administered practically without appeal to the courts. Barring cases to insure the prompt filing of reports, there have been but two cases involving the authority of the Commission under this section of the law since its organization, one of which was abandoned because it was felt that the result was very uncertain, and the other, carried to the Supreme Court, was decided against the Commission on the ground that the law made no formal provision for mandamus process. This defect was remedied by the amendment of 1906, which, taken in connection with the penalty features of the law, gives vitality to a section which, from the point of view of effective administration, had been little more than an expression of legislative opinion favorable to general publicity.

There are three provisions in this section as amended which call for special mention for the reason that they indicate the character and extent of the work the Interstate Commerce Commission has undertaken upon the basis of the authority conferred.

In the first place monthly and special reports, as well as annual reports, may now be demanded of the carriers.

In the second place the law provides for a uniform system of accounts for all transportation agencies subject to the jurisdiction of the Commission. The transportation agencies here referred to are steam carriers by rail,

electric carriers by rail, express companies, sleeping car companies, water carriers so far as they are subject to the jurisdiction of the Commission, and pipe-lines. The purpose of Congress in passing this law, and of the Commission in making provision for its administration, is to provide a uniform system of operating and financial accounts for all of the agencies of transportation, so far as this may be accomplished without doing violence to the physical or contractual conditions under which the several classes of business referred to are carried on. It is important that the comprehensive character of the uniform system of accounting, which it is the purpose of the Commission to promulgate, should be recognized. There are, of course, many questions of jurisdiction involved in the promulgation of such a general system of accounts, but the embarrassments likely to arise on this account have in large measure been relieved, so far as administration is concerned, by the expression on the part of State authorities of their willingness, indeed their eagerness, to accept the rulings of the Commission in all matters pertaining to corporation accounting.

The third provision of the twentieth section which should be recognized in order to understand its purpose and its character is, that the Commission is authorized to "employ special agents or examiners, who shall have authority . . . to inspect and examine any and all accounts, records, and memoranda kept" by carriers subject to the jurisdiction of the act. The influence of an efficient board of special examiners upon the manner in which railway operations are carried on is essentially different from that of an examination made when books and records are brought before the Commission in the trial of a cause. The former tends to prevent the rise of those mischiefs which are likely to show themselves in view of the peculiar temptations to which executive

and traffic officials are exposed; the latter, while doubtless acting in some measure as a deterrent, does not hold in view as its chief aim the establishment of conditions in which the peculiar temptations incident to railway management shall no longer exist. By this contrast is made clear the chief significance of that portion of the act which authorizes the Commission to establish a uniform system of accounts and to appoint a board of special examiners in order to insure conformance on the part of the carriers with the prescribed rules of accounting.

It is evident, from the above cursory description, that the efficiency of the twentieth section of the Act to regulate Commerce is no longer confined to the general, tho somewhat indefinite, influence of publicity. It is of course true that the influence exerted by publicity through the annual, the monthly, and the special reports issued by the Division of Statistics and Accounts of the Commission, as well as by the fact that the annual reports of carriers are, by law, made "public records," will be greatly strengthened by the promulgation of a standard system of accounting. But the real significance of the amendment of 1906 is much more comprehensive. In any case the efficiency of that section, indeed the test of the work of the Commission under that section, centers in the character of the accounts prescribed, and in the correctness of the principles on which such accounts are based. I may therefore be pardoned for dwelling at some length upon the character of these accounts, and I trust it will not be regarded as a reflection upon your familiarity with the science of accounting if I refrain, as far as possible, from making use of technical language.

Railway accounts, roughly speaking, are divided into two general classes,—operating accounts and capital accounts. The former have to do with the moneys received for services rendered and the costs of rendering

those services; the latter have to do with receipts from investments, payments upon capital, and all other debit and credit entries which pertain to the corporation as a business or financial entity. Railway accounting covers also a large number of analytical statements, inventories, lists of physical and corporate assets and liabilities, and secondary or supporting accounts, a consideration of which, however, must be excluded from this cursory review.

As there are two general groups of accounts, so there are two figures, the correct determination of which may be accepted as the test of a sound system of accounting, or of the accuracy with which accounting rules are applied: namely, the net revenue from operation with which the operating accounts are closed, and the accumulated surplus, the determination of which is the purpose of the comparison between corporation assets and corporation liabilities as shown upon the balance sheet. If these two figures are guaranteed, and if at the same time the details of the two accounts are so drawn as to meet the requirements of operating officers in their effort to obtain efficiency and economy, the fundamental aims of accounting rules may be said to have been attained.

The work of formulating a uniform system of accounts for all of the transportation agencies was begun with the operating accounts of steam railways. These operating accounts cover six classifications, and it should be held in mind that the rules of accounting which, under the law, become binding upon the carriers are expressed in the text explanatory of the primary accounts for which these classifications provide.

The six classifications referred to are as follows:

Classification of Operating Expenses.

Classification of Operating Revenues.

Classification of Road and Equipment Expenditures.

Classification of Locomotive-miles, Train-miles, and Car-miles.

Classification of Outside Operations.

Classification of Additions and Betterments.

Of the above classifications, the first four—that is to say, Operating Expenses, Operating Revenues, Road and Equipment Expenditures, and Locomotive, Car, and Train Miles—were issued under orders of the Commission dated June 3, 1907: the others were issued as circulars of instruction, and, in the main, have been followed by the carriers. These are now in process of revision, and will shortly be issued under formal order to take effect July 1, 1908.

In addition to these operating accounts, a tentative form for an income statement has also been issued, as well as for that of a balance sheet. It has been the policy of the Commission to draw out first a scheme of accounting for steam carriers, and then to modify these accounts so far as may be necessary to meet the requirements of other transportation agencies. It is thus evident that the fundamental principles of accounting will be found in the accounts prescribed for steam carriers.

A complete presentation of the subject would require at this point mention of the joint facilities accounts, of the grouping of primary accounts, of minor adjustments designed to make these accounts respond to the requirements of executive officials, and many other similar matters technical in character, but these may be passed over as relatively less important than the consideration of the more fundamental principles. The accounting scheme approved thus far by the Commission may be said to rest upon four fundamental principles.¹ These are:—

¹ Use was made at this point in the address of a letter addressed to the chairman of the Committee on Finance of the United States Senate relative to the use of railway bonds as securities from National Banks. See Senate Document 212, 60th Congress, 1st Session.

1. That discount on securities is not an item properly included in the cost of property.
2. That depreciation is an element of operating cost, and should be included in operating expenses.
3. That betterments and additions are not elements of operating cost, and should be charged to income or to capital.
4. That the total of assets and the total of liabilities should be shown upon the balance sheet, and that "profit and loss" should be so analyzed as to show the different kinds of liabilities covered by the accumulated surplus.

The first of the principles above named pertains to the future rather than to the present, for up to the present time carriers have been accustomed to charge discount on securities sold to cost of property, carrying such discount as a permanent asset. It is important, as bearing upon the influence likely to be exerted by this system of accounts, to know that the construction accounts promulgated by the Interstate Commerce Commission and adopted by most of the States, propose to open the balance sheet account with a cash statement of what it costs to create the property at one hundred cents on the dollar. A moment's consideration will show that this is a sound principle of accounting. The balance sheet statement of cost should be the book record of actual investment. The amount of securities issued to obtain the money spent in construction has nothing to do with the statement of such cost, for it is the money spent that measures cost and not bonds or stocks issued. A correct statement of investments is the beginning of correct accounting, if for no other reason than that it is the basis from which to measure depreciation charges on the one hand and charges for additions and betterments on the other.

Another fact, also, is worthy of mention in this connec-

tion. The rules governing the construction accounts have been drawn with a view of the possibility that Congress may at some future time deem it wise to require an inventory valuation of railway property and to authorize some form of supervisory control over capitalization. The analysis which underlies these accounts, as indicated by the principle that discount should be excluded from costs, is an analysis which easily lends itself to this general purpose. The propriety of a law calling for some form of supervisory jurisdiction over the capitalization of property used in transportation is not under discussion, but, should Congress deem such a measure proper, the accounts thus far prescribed are believed to be adjusted to the requirements of such supervisory jurisdiction.

The second and the third of the above principles may be considered together, for the "depreciation accounts" and the "additions and betterments accounts" are each complementary to the other. The purpose of depreciation accounts is to guard against the overstatement of net revenue by failure to include all the costs of operation in operating expenses, while the purpose of additions and betterments accounts is to guard against the understatement of net revenue by including in operating expenses, as a cost of operation, what in fact is an improvement to the property. Heretofore no uniform rule has controlled these charges. The executive officer, perhaps to make a showing, perhaps to influence the market (the purpose is not important), has believed it to be a prerogative of management to vary these charges from time to time, according to some special purpose or fancied exigency. It is the purpose of the system of accounts promulgated by the Interstate Commerce Commission to deprive the executive officer of the liberty of deciding arbitrarily when a liability shall be taken into the accounts. There can be no doubt as to the soundness of the rule that a formal

provision for depreciation is required by a sound system of accounts. It has been well stated by an English writer that

no profit can exist until expired outlay on productive plant has been provided out of gross revenue. One of the most vital matters connected with productive industries and trading concerns is the regular assessment with substantial accuracy of the annual net profit or loss which has resulted from the operations of each year; and unless a near approximation to the outlay on productive plant which has expired within each year is made and fully provided for out of gross revenue, no correct statement of profit or loss can be obtained.¹

The reverse of this comment is equally true from the point of view of betterments and additions, for a correct statement of cost of transportation requires not only that current revenue should bear a sufficient charge to cover all the wear sustained by the capital assets used in operation, but that such revenue should not be called upon to bear a charge the purpose of which is to increase such assets. A system of accounts is composed very largely of a series of definitions, and the rules for depreciation, as also for additions and betterments, take their proper place in such a system, when it is recognized that such rules are essential parts of the definition of operating expenses.

The fourth principle submitted above refers to the balance sheet, mention of which leads to a range of technical questions too large to be considered at this time. A properly constructed balance sheet should reflect the results of operation and of financial transactions from the birth of the corporation to which it pertains. The significant figure with which it closes is the surplus accumu-

¹P. D. Leake, F.C.A., F.I.D., in paper read before the Institute of Directors, on "The Question of Depreciation and the Measurement of Expired Outlay on Productive Plant."

lated during the life of the corporation,—that is to say, the profit and loss; and it is essential that this surplus should be so analyzed as to represent in fact what it assumes to represent. Here, if anywhere, is an opportunity for the strict application of sound rules. The balance sheets published at the present time are of slight value, except for those who are acquainted with the details of the supporting accounts upon which they rest. If, however, the supporting accounts are kept in a uniform manner by the carriers, and if, as the result of adequate supervision, the accumulation of these accounts into the balance sheet may be relied upon as correct, the balance sheet will prove to be in fact what it is in theory,—the key to the financial and operating management of a carrier.

Having described the work undertaken upon the authority of the twentieth section of the Act to regulate Commerce, the query naturally arises as to its industrial and political significance. To make this entirely clear would require a more detailed analysis of the accounts than has been possible in this cursory survey, and I shall therefore content myself with a few generalizations in response to what I know, from a somewhat extended experience, will be specially acceptable to university students. These generalizations may be regarded as superficial or they may be regarded as profound; but, in any case, they will, I trust, make yet clearer the far-reaching results of this new form of activity upon which the Interstate Commerce Commission has entered. What follows covers four points.

First. The promulgation of a uniform system of accounts for all transportation agencies, and the organization of a board of expert examiners one of whose chief duties it will be to see that the carriers comply with the rules of accounting laid down, will tend to the creation and per-

petuation of a stable market for railway securities. The investor at present has no assurance that his capital placed at the disposal of corporate management will be maintained. If he receives a dividend, he does not know whether the money thus returned is money earned or a return under the name of a dividend of a portion of his original investment, nor, on the other hand, is he sure that the accumulated surplus stated on the balance sheet represents all of the earnings of his capital. Unfortunately, the investor (and I speak of the investor in railway securities and not the speculator) relies almost exclusively for valuing securities which represent his investment upon the statement of net revenue from operation or upon the dividends which are anticipated or paid. The monthly and annual statements of net revenue become, therefore, a means in the hands of the management for affecting the price of securities, and so long as the executive feels himself at liberty to instruct the accounting officer to vary charges to operating expenses from month to month or from year to year, he is exposed to the temptation of making an improper use of such liberty,—a temptation to which a sufficient number of executive officers will succumb to spread suspicion over the entire situation. The first step, therefore, toward the creation of general confidence in railway securities is a strict and comprehensive definition of operating expenses and the promulgation by competent authority of the rule that all statements of net revenue from operation shall reflect the facts of operation, and not be influenced by the desire of the management to make a good or a bad showing. The form of depreciation charges required by the approved definition of operating expenses is, perhaps, the most significant illustration of the many provisions to be found in the scheme of accounts promulgated by the Interstate Commerce Commission which are designed to create

and to perpetuate confidence in the operation of railway properties.

Equally important, however, is the rule that expenditures for additions and betterments should be excluded from operating expenses. The policy of improving the property out of revenue is not called in question by the new rules of accounts; but, in case property is improved, the accounts insist that the increase of the capital assets of the corporation resulting from such a policy should be set up in the accounts and carried as a liability. This is essential for a correct balance sheet statement. The railway balance sheet commonly in use is not a complete record of all the facts pertaining to such a statement. In some cases profit and loss is understated, which means that the books of the corporation carry a secret reserve; in other cases profit and loss is overstated, which means that the books of the corporation carry a secret loss. The Chicago and Alton episode was in fact, tho not technically, a capitalization of such a secret reserve by stock-holders who apparently had purchased the stock of this company for no other purpose than the gain resulting from such capitalization. This case is typical of one of the motives which is responsible for a large number of consolidations in recent years,—a motive which, it is believed, will be somewhat restricted in its field of operation if the balance sheet can be so drawn as to show upon its face every essential feature resulting from the operating or financial transactions to which it pertains.

The significance of wide-spread confidence in railway securities cannot be overestimated. Such a condition of the public mind means that the field of investment will be broadened while the margin of speculation will be narrowed. It means that agitators will be deprived of much of their oratory, and that promoters of projects industrially sound will find adequate capital for the

provision of all needed facilities. And, most important of all, a general condition of confidence in railway securities will tend to check those violent movements of the industrial pendulum between periods of unreasonable activity and periods of equally unreasonable depression to which business of modern times is exposed.

Second. It is scarcely possible to consider any phase of the transportation question without coming sooner or later to the question of railway rates. The most fundamental, or at least the most persistent, consideration in the discussion of railway rates in the United States is the consideration of cost of service. There are many who believe that the rule of cost fails to include all the considerations pertaining to the problem of railway rates; there are others who, while accepting the rule as sound in principle, deny its practicability for the reason that it is not possible to arrive at the specific cost for a specific service; there are others who hold the rule to be a sound rule from the point of view of practice as well as that of theory; and, finally, there is still a fourth class of thinkers who believe that railway rates must in any case be treated in a more or less arbitrary manner, and who are content to confine arbitrary adjudication to as narrow a margin as possible. It is an interesting observation, and one which brings into clear light the significance of a uniform system of accounts prescribed by adequate authority, that all parties to this much-discussed question of railway rates look with confident expectation for the vindication of their ideas to the work which the Interstate Commerce Commission has undertaken under the authority conferred by the twentieth section of the Act to regulate Commerce, as amended. A uniform system of accounts, if applied to a proper classification of carriers and reduced to trustworthy statistical statements, will warrant the use of comparison, which, after all is said and done, is the

consideration upon which rate-making Commissions now place the greatest reliance. It will enable the application of cost accounting wherever cost can be analyzed, while at the same time it will make evident those elements of expense which must be arbitrarily assigned. What is of more importance, it will establish rules for the analysis of revenues and expenses prior to the trial of specific cases, and thus make it impossible for attorneys to call upon accounting officers to produce statements in support of passing contentions.

I confess I have little confidence in the cost theory of rates. It does not lie within the ability of any system of accounts to determine the specific cost of any specific service of transportation, and were I permitted to indulge in a forecast of the final influence of a standard system of railway accounting, it would be that this attempt to furnish reliable data for the application of the cost theory will indicate so clearly the practical limitation of that theory as to force the recognition of a broader and more satisfactory line of consideration. This does not mean that a correct statement of the facts of revenues and expenses is not necessary for the determination of rate questions, but that the cost theory, at least as now applied, will not be accepted as an all-sufficient basis of argument.

Third. A third class of tendencies bound up in the successful administration of the twentieth section of the Act to regulate Commerce is suggested by two events of recent occurrence,—events which, while important in themselves, are referred to in this connection because they illustrate that the influence of a supervised system of railway accounts extends far beyond the limits of the business of transportation, and affects, or may affect, the industrial structure of the country as a whole. Both of these events depend for their significance upon the fact that governmental supervision over railway accounts will

lead the public to place confidence in published statements relative to railway operations as well as in the books and accounts which the carriers keep.

The first of these recent events is the fact that the Aldrich Bill to provide for an emergency currency, as originally submitted to the Senate, included certain railway bonds as the basis for note issues by the national banks. This is no place to discuss the merits or demerits of that bill. The incident is mentioned in this connection because it presents a specific illustration of the use to which such securities might be put, if issued under conditions which insure for them a permanent value. The exclusion of railway bonds from the Aldrich Bill before it passed the Senate was due to the argument that securities of this class are speculative in character,—an argument which could have no force under a system of adequate governmental supervision. Quite apart, however, from this specific use of railway bonds, it is evident, when one considers the extensive use made of credit in the modern business world, how far-reaching must be the result of supervisory administration if such administration can give certainty and stability to billions of securities which now appear to Congress as too volatile and speculative to be used as collateral for banking liabilities.

The second illustration pertains to labor conditions. Assume general confidence in the statements of railways relative to operating and financial conditions to have been established, and that railway employees, as well as the public at large, have come to believe that such statements represent the truth; assume also that the accounts of the carriers are kept in such a manner as to enable the representatives of labor easily to test the accuracy of published statements; is it not reasonable to conclude that such a situation would lead to the development of a wage contract for railway employees according to which wages

would follow general conditions of prosperity? On two occasions since last December has the Division of Statistics and Accounts of the Interstate Commerce Commission been called upon to investigate statements touching the propriety of reducing the wage scale for railway employees, and it was this fact that suggested the possible development outlined above. Such a purpose was not, of course, within the intent of Congress, but it shows more clearly than any extended argument that the twentieth section of the Act to regulate Commerce contains possibilities which, in their natural unfolding, may affect fundamental adjustments in the organization of industrial affairs.

Fourth. In what has thus far been said, frequent use has been made of the phrase "administrative supervision," —a phrase which leads to a consideration of the fourth and possibly the most fundamental of the tendencies involved in the successful administration of the twentieth section of the Act to regulate Commerce. That the business of transportation is a business "affected with a public interest," and for that reason may properly be subjected to governmental control, is no longer open to serious question. The problem relates exclusively to the manner in which that control should be exercised. Up to the present time, if one may judge by the laws which have approved themselves to Federal and State legislatures, the idea seems to have been that all of the rules of conduct pertaining to the carriers should be expressed in formal legislation, and that the enforcement of these rules should rest with the courts or with commissions so constituted as to make it necessary for them to follow judicial or semijudicial methods of procedure. The influence exerted by judicial determination and review, in so far as it bears on the conditions under which the business of transportation is carried on, is limited to decisions or

opinions rendered in causes tried or complaints answered. It is strange to me that any student of the transportation problem should not see that an influence so restricted must fail to meet the requirements of the situation. Not only must the issues thus raised be confined to cases of flagrant abuse or special gravity, but, from the nature of the authority exercised, neither the courts nor commissions can enter upon a consideration of these issues in a broad and comprehensive manner. Any approach to the problem of railway control from the comprehensive point of view involves the exercise of administrative jurisdiction. It is upon this domain of influence that the Federal Government entered when Congress conferred upon the Interstate Commerce Commission adequate power to prescribe and supervise railway accounts. This, as it appears to me, is something new in the political organization of our country, and is of interest, not alone because of what it may accomplish in the direction of supervision over railway management, but because of the influence it may exert as a model for similar control in other fields of industry in which the principle of competition fails to work its normal results.

I cannot better explain the meaning of this new point of view than by referring to one feature of the order of the Interstate Commerce Commission promulgating the standard system of accounts. The prescribed rules are found in the classifications already mentioned, as, for example, the Classification of Operating Expenses, the Classification of Operating Revenues, the Classification of Additions and Betterments, and the like. The order under which these rules are made obligatory on the carriers prescribes that the chief accounting officers of the respective carriers shall be held personally responsible for the application of the rules. The practical effect of this order is twofold. In the first place it recognizes that the relation

which, under the law, exists between the carrier and the Federal Government, is the relation of an agent to his principal, thus giving a practical and effective expression to the claim that the business of transportation is a business "affected with a public interest." In the second place this order assumes, in effect, that the chief accounting officers of carriers are, so far as accounts are concerned, representatives of the Interstate Commerce Commission for the execution of the law. The situation is as tho the accounting officers were directly in the employ of the Federal Government, and, as such, obliged to accept instructions with regard to accounting matters, not from superior officers of the corporations, but from the government. This may be a bald way of stating the situation, but it will serve to show that this twentieth section, as it is being administered by the Interstate Commerce Commission, gives expression to a new principle in the governmental control of transportation agencies. It is believed that the result of this principle, if worked to its logical conclusion, will be toward the restoration of those conditions in which the old common-law principle of competition can exercise its normal influence over the great body of industrial transactions. The development of administrative supervision will, in my opinion, tend to restore the balance between the judiciary and the executive, and should give encouragement to those who have in the past looked with solicitude upon the activities of the courts over matters which in their nature are of an administrative character. This is too broad a subject for cursory discussion. I have perhaps said enough to explain the point at issue. If, as has been claimed by students of political science, government in this country is embarrassed when dealing with public service industries, because there is no adequate means for the exercise of administrative discretion, the interpretation here placed upon the twenty-

eth section of the Act to regulate Commerce shows this section to be one of the most important Congressional acts of recent years.

It was my good fortune to have been a pupil of the Hon. Thomas M. Cooley, first chairman of the Interstate Commerce Commission, and to have been associated with him in the early days of the Commission. It will be remembered that in those early days a good deal was said about the constitutionality of the Act to regulate Commerce because of the uncertainty which existed relative to the political character of the newly created body. In the course of a conversation on this general question, I remember asking Judge Cooley whether the Interstate Commerce Commission belonged to the executive or to the judicial branch of the government, and the only satisfaction that I gained by the reply was the observation that the question submitted raised a very interesting point of constitutional law. As I look back upon this conversation from the vantage-ground gained by the development of industrial, political, and juridical principles since 1887, I can understand now, as I could not then, how my question must have appeared to the clear, analytic mind of the first chairman of the Interstate Commerce Commission. He appreciated that the problem of railway control was one with which the juridical principles at hand were not quite consistent; he appreciated, too, that industrial integration had not gone far enough to enable the Commission to exercise satisfactorily administrative supervision; it is possible, also, that he appreciated that in 1887 the principle of administrative supervision was so strange a principle to the American people that it would have been useless to advocate it as a means for the exercise of governmental control. It was natural, therefore, that one intrusted with the responsibility of making the original law effective should

decline to discuss a question which involved the recognition of a principle that was incapable of application in view of the industrial conditions of the time and the attitude of mind then entertained by the American people.

Since 1887 decided changes have taken place in the ideas with which the people of this country are familiar, and advocacy of a formal separation of the judicial and the administrative functions involved in the problem of railway control is the occasion of no surprise. The Esch-Townsend Bill passed by the House of Representatives in 1905 made provision for a court of transportation. More recently, Commissioner Prouty, now serving his third term as a member of the Interstate Commerce Commission, suggested in an address before the American Bar Association that there should be a formal separation between the judicial and the administrative duties conferred by law. It is with no desire to discuss the propriety of such a separation that reference is made to this proposal for a reorganization of the Interstate Commerce Commission, but rather to support, by well-defined expressions, the claim that the problem of governmental control over railways involves the exercise of two more or less distinct altho complementary lines of influence. The interest which students of this problem have in an analysis of the twentieth section of the Act to regulate Commerce centers in the fact that this section provides a means for at least a partial realization of the principle of supervisory administration. It is what this section means for the future, should its true significance be recognized, that should claim the attention of the student of political science.

HENRY C. ADAMS.

THE RELATION OF MONOPOLY PRICE TO THE RATE OF INTEREST.

SUMMARY.

Reasons for distinguishing in theory between the price policy of a temporary monopoly and that of a permanent monopoly, 384-389.—The current theory of monopoly price fails to make adequate allowance for the differences in monopolies, 389-390.—Rate of discount a factor in determining prices set by a permanent monopoly, 391.—Law of permanent monopoly price, 392.—Conditions affecting the rate of discount employed by the monopolist in fixing prices, 393-394.—Possible criticisms of the theory of permanent monopoly price, 394-397.—Practical consequences of the theory, 397-398.

I.

FEW achievements of modern economic theory are held in more general esteem than the formulation of the law of monopoly price. One who compares the vague references to monopoly price of Adam Smith, Malthus, Senior, and Mill with the clear-cut statements of Marshall, Ely, Walras, and Hobson, is forced to admit that substantial progress can be made even by the methods of "pure theory." Nor has this progress in clearness of thought remained without practical consequences. So long as economists believed with Adam Smith that a monopoly price would be, "on every occasion, the highest that can be got," they were compelled to regard drastic action against every form of private monopoly as the proper policy of every uncorrupted government. Now that economists as a class understand that a monopoly price is one which produces the maximum net revenue, and that this price is not necessarily a very high one, they are able to take a calmer view of the situation. Monopoly

is still generally regarded as an evil; but the evil is not one of such magnitude that all other considerations of social economic policy must be brushed aside in an attempt to solve the problem of monopoly.

A modern Mill, viewing the progress that has been made, would doubtless write that, "happily, there is nothing in the laws of monopoly value which remains for the present or any future writer to clear up. The theory of the subject is complete." That such is the prevailing view will be evident to any one who notes the harmony of opinions of modern text-book writers on the subject of monopoly,—a harmony the more striking in a science where almost everything else is discord. To question the validity of a law thus generally accepted will appear to many unwarranted presumption. Yet it seems to the present writer that the eminent economists who formulated the accepted laws of monopoly price have ignored certain patent facts that are of such importance as to justify a restatement of those laws. It must be borne in mind that even a slight defect in a theory having a direct bearing upon political action is a serious thing. Economists advocate certain political policies on the basis of a theory of monopoly price. They must therefore assure themselves that the theory is as nearly flawless as human reason can make it.

For the purposes of the present discussion, monopolies may be classified as temporary, or commercial, and permanent, or industrial. The essence of the temporary, or commercial, monopoly is control of the existing supply of an article of commerce. The essence of the permanent, or industrial, monopoly is control of the means of producing an article of commerce. A corner in wheat or cotton will serve as a type of the commercial monopoly, while a trust or a public utilities corporation typifies the industrial monopoly. Is it reasonable to suppose that the price

policy of a monopoly of the first class will be governed by the same rules as those governing the price policy of a monopoly of the second class? There is at any rate a presumption that this supposition is not reasonable. We assume that the monopolist, in either case, has the desire and the power to fix prices solely with a view to his own interests. But the conditions that the holder of a temporary monopoly must take into account in seeking his own greatest gain are not the same as those with which the holder of a permanent monopoly must deal. The monopolist who has cornered the cotton supply will take into account present market conditions only. The prices which he fixes may be so high as to disorganize the spinning and weaving industries or to lead in the end to the general introduction of other fibres; but this is of no concern to the monopolist. Capital invested in the production and transportation of cotton will be injured by any curtailment of demand resulting from the monopolist's price policy, but this injury does not fall upon him. What the monopolist aims to do is to secure, within a brief space of time, the maximum profit that can possibly be extorted from the buyers of cotton. The current doctrine that a monopoly price is one which produces the maximum immediate net revenue is an accurate definition of the price that will be set by a temporary monopoly.¹

The monopolist who controls a branch of production, on the other hand, must look to future as well as to present market conditions. He has given to the public a pledge of moderation in the shape of capital permanently fixed in producing plant and in the shape of future profits capitalized. He must therefore take into account every possible reaction of a given price policy upon the future

¹ It is not here maintained that the economists who formulated the laws of monopoly price had the temporary monopoly in mind. The discussion of cost, which makes up a part of the accepted exposition of monopoly price, would have no point in a treatment of the laws governing the price fixed by temporary monopoly.

demand for the commodity which he produces. It cannot safely be asserted that a given present price will necessarily react upon future demand. Few would deny, however, that in the great majority of cases a low price in the present will tend to increase demand in the future, while a high price in the present will tend to reduce future demand. There may have been a time when the demand for commodities was relatively stable, when a price so high as to discourage consumption in one year would have had no perceptible effect upon the demand in succeeding years. But the modern consumer has great latitude of choice among commodities for consumption. New commodities are constantly seeking to gain his favor; commodities already entering into his consumption are seeking a larger share in it. Each industry must win for its product a place in the consumption of the stream of new purchasers in society, who have not yet determined upon the proper apportionment among various commodities of the purchasing power that they command. Failure to conciliate these new purchasers in the present entails a loss of habitual customers in the future.¹

II.

A permanent or industrial monopoly under intelligent business direction will, then, take future demand into account in fixing present prices. An adequate statement of the law governing the prices that such a monopoly will place upon its products must make allowance for the influence of present prices upon future profits; and the relation between the two must be definitely formulated. Do we find any such definite treatment of this aspect of the problem of monopoly price? Walras, following Cournot, ignores altogether the effect upon future demand

¹ Compare Patten, *Theory of Prosperity*, chap. ii.

of monopolistic prices.¹ Marshall makes the explicit assumption that the monopolist fixes prices with exclusive reference to immediate net revenue. After formulating the general law of monopoly price on this basis, Marshall admits the qualification that a monopoly, for the sake of introducing its products to a wider market, may fix a price a "little below" that which would yield the maximum net revenue.² Ely arrives at his law of monopoly price under the tacit assumption of a future demand that is not affected by the present price policy of the monopoly. Like Marshall, he admits the possibility that prices may be kept fairly low for a time in order to create a demand for the monopolized product.³ Jenks appears to hold that a monopoly will take into account present revenue only, except in cases where potential competition makes a policy of high prices unsafe.⁴ Hobson contents himself with the statement that "the interest of the trust . . . lies in fixing supply at the highest net profits. Now the net profits of producing and selling any specified quantity of supply are ascertained by deducting the expenses of production from the aggregate takings."⁵ No allowance is made for the future results of such a price policy. Nor has the writer been able to find a more satisfactory statement of monopoly price in any one of the half-dozen excellent recent text-books on economics.

It might be supposed that in the literature relating to the best-known part of the monopoly field—railway transportation—we should find a more scientific formulation of the principles governing the action of the monopolist in choosing between present revenue and future revenue. It is well known that few, if any, railroads, even in highly

¹ *Éléments d'Économie Politique Pure*, 4^{me} édition, pp. 435 *et seq.*

² *Principles of Economics*, 3^d edition, pp. 540, 541.

³ *Monopolies and Trusts*, pp. 103, 104.

⁴ *The Trust Problem*, pp. 59, 62.

⁵ *Evolution of Modern Capitalism*, p. 158.

monopolistic positions, fix rates at a level so high as to extort the last cent of profit that the year's business can be made to yield. In fixing rates, the railway traffic officials always keep future business in mind. "The chief aims of the traffic manager in fixing rates and fares are to obtain a profitable revenue and to secure an increasing volume of business."¹ True; but, since the two aims are not strictly compatible, we may ask, How great an increase in volume of business will be regarded as an offset for a given amount of possible revenue sacrificed? We cannot get an answer to this question from the authority cited nor from any other writer on railway rates, so far as I have been able to discover.

It seems, therefore, not unjust to say that writers on monopoly price have treated with admirable clearness one part of the problem,—namely, the method of determining the maximum immediate net revenue,—and so have formulated a law which is applicable without qualification to monopolies that by their nature concern themselves with immediate net revenue only. Another part of the problem, however, these writers have dismissed with vague remarks to the effect that the monopolist will be content with a "little less" than the largest possible immediate revenue, or that a permanent monopoly will shape its policy with reference to its best interests in the long run, etc.

III.

In order to fix a price that will best subserve his own interests, the holder of a permanent monopoly must, first, estimate the present net revenue that a given price will yield. Secondly, he must estimate the loss in future revenue from the probable shrinkage in demand that the fixing of such a price will entail. Thirdly, he must reduce

¹ E. R. Johnson, *American Railway Transportation*, p. 277.

the future revenue to present terms, in order to determine whether the present gain counterbalances the future loss.

To employ a simple illustration, let us suppose that the problem presents itself of fixing the most profitable price upon a patented article. We will suppose that the initial difficulties of introducing the article to the public have been surmounted, and that the patent has still ten years to run. Let us say that a price of \$1.00 per unit will yield the maximum net revenue for the current year, and that this revenue will amount to \$1,000,000. This price, however, is so high as to cause in the second year some shrinkage in demand, so that the net revenue falls to \$950,000. For each succeeding year the revenue declines by the same amount, until in the tenth year it is only \$550,000.

The monopolist may, however, fix upon a lower price per unit, say 50 cents. At this price the net revenue for the first year is, we will say, \$600,000. The increase in demand in the second year results in an increase of revenue of \$50,000, and a similar increase, we will say, marks the business of each succeeding year, until in the tenth year the net revenue is \$1,050,000.

The respective advantages and disadvantages of the two price policies will be made clearer if we place the assumed data in tabular form:—

	<i>Net revenue, price \$1.</i>	<i>Net revenue, price 50 cents.</i>	<i>Net gain or loss from the higher price: gain, +; loss, -.</i>
1st year	\$1,000,000	\$600,000	+ \$400,000
2d year	950,000	650,000	+ 300,000
3d year	900,000	700,000	+ 200,000
4th year	850,000	750,000	+ 100,000
5th year	800,000	800,000	
			+ \$1,000,000
6th year	750,000	850,000	- \$100,000
7th year	700,000	900,000	- 200,000
8th year	650,000	590,000	- 300,000
9th year	600,000	1,000,000	- 400,000
10th year	550,000	1,050,000	- 500,000
			- \$1,500,000

The higher price is the more remunerative in the first four years, the lower price in the last five years. In the first four years the high price yields an aggregate of \$1,000,000 in excess of the revenue that the lower price would yield; but in the last five years the lower price yields \$1,500,000 in excess of the revenue that the higher price would yield. The monopolist must choose between the two prices after weighing the \$1,000,000 obtainable in the near future against the \$1,500,000 obtainable in a more remote future. This balancing of returns accruing at different dates involves the reducing of each year's net revenue to present values,—a discount operation, it is superfluous to say.

It will be evident to the reader that whether the \$1,000,-000 accruing in the earlier years is or is not to be preferred to the \$1,500,000 accruing in the later years must depend entirely upon the rate at which the monopolist discounts the future. This rate may be so high that the results of the higher price will seem more advantageous than those of the lower price, or it may be so low that the results of the lower price will appear the more advantageous. Thus it appears that the rate of discount employed by the monopolist is a determining factor in fixing monopoly price.

But the practical monopolist is not limited to a choice between two possible prices. The price of \$1 may unduly sacrifice the future to the present, but the 50 cent price may unduly sacrifice the present to the future. There must be some price which will place on an even balance the conflicting claims of present and future, and this is the price that a permanent monopoly which is fully awake to its own interests will place upon its products. Any advance in this price would mean a loss in future income which, reduced to present values, would exceed the present gain. Any reduction in this price would mean an in-

crease in future income which, reduced to present values, would be inferior to the present loss entailed.

For simplicity I have assumed that the prices remain unchanged throughout the life of the monopoly. This assumption is of course arbitrary. In practise the monopolist who ignores the claims of the future will fix each year's price at a figure that will yield the maximum net revenue for that year, and this price will naturally vary. Similarly, the monopolist who gives due consideration to the interests of the future will vary his prices. This, however, involves no new principle. Again, to avoid an unnecessarily lengthy exposition, I have employed as an example a monopoly having a limited period of existence. But the same principles are obviously applicable to a monopoly of indefinite duration. The intelligent monopolist will be guided in his price policy by his estimate of the reaction of present price upon future profits, and by the rate at which he discounts a future income.

We may now formulate a general law governing the price of the products of a permanent monopoly. That price will be one which promises the maximum present value to the monopolist of all net returns, present and prospective. This price we shall call the permanent monopoly price, in contradistinction to the price which yields the maximum immediate return or temporary monopoly price.

The present value of all net returns, present and prospective, is generally recognized to be the capital value of the monopoly to its possessor. Accordingly, we may state our law of monopoly price under another form. Permanent monopoly price is that price which gives a maximum capital value to the monopoly, in the eyes of the owner of the monopoly.

IV.

It is evident that the permanent monopoly price will be lower than the temporary monopoly price except in the improbable case of commodities the future consumption of which cannot be in the least discouraged by extortionate present prices.¹ And the more readily future demand responds to present prices, the greater will be the difference between the temporary monopoly price and the permanent monopoly price. Further, the lower the rate at which the monopolist discounts future incomes, the greater will be the difference between the two forms of monopoly price. And this suggests another inquiry. At what rate will the monopolist discount future incomes,—the general rate prevailing in the business community or some rate peculiar to himself?

In spite of the "fluidity of capital," it often happens that a particular enterpriser cannot gain control of enough capital to exploit thoroughly all the abnormally productive opportunities over which he has control. An enterpriser enjoying a monopoly of a certain industry has invested, we will say, all the capital that he possesses and all that he can borrow. Nevertheless, he could easily invest more capital in forms that would yield 12 per cent. Now the sacrifice of a present income in order to secure a greater one in the future may be regarded in the light of an investment. An enterpriser who can make capital yield 12 per cent. cannot afford to sacrifice a present income unless the future increase of income thereby insured will exceed the present income by a sufficient margin to allow 12 per cent. interest on the sum of present

¹ If the monopolist discount a future income at so high a rate that no future shrinkage of demand will be of importance to him, the permanent monopoly price will be equal to the temporary monopoly price. This case is, however, of theoretical importance only, since a rate of discount so high as to destroy all concern for the future cannot occur under modern business conditions. This rate of discount would be, in fact, infinity.

income sacrificed. Under the circumstances—common enough in the case of new monopolies—the rate of discount employed will not be that prevailing in general business, but a higher rate corresponding with the productiveness of capital in the monopolist's employ.

If, on the other hand, the monopolist can borrow at the current rate of interest as much capital as he can use, the rate at which he will discount future incomes will be simply the current rate. He will sacrifice a present income of \$100 for an income of \$104 accruing in one year if he can borrow at 4 per cent. all the capital he requires. A well-established monopoly is likely to be able to borrow at the current rate all the capital it can use. Accordingly, we may say that, as a rule, it is the current rate of interest that must enter into the determination of permanent monopoly price. If, then, there is a tendency for the general rate of interest to decline, we may confidently predict an increase in the margin between the temporary monopoly price and the permanent monopoly price.

V.

The theory of permanent monopoly price set forth in the foregoing pages will doubtless be criticised as "extremely theoretical." It may therefore be worth while at this point to forestall some of the criticisms that can be urged against it. Perhaps it will be said that a practical monopolist does not in fact give much attention to the future effects of his present action in fixing prices; that he is reluctant to abate his present extortions, inasmuch as it is his purpose to "reap a harvest and retire from the field."¹ This may be the natural policy of a monopolist whose position cannot long be defended against rising competition or legal prosecution. In such a case, how-

¹ Ely, *Monopolies and Trusts*, p. 132.

ever, we are dealing with a temporary, not with a permanent monopoly. Consequently, it is natural that the price policy will be that of a temporary monopoly. If the monopolist enjoys a position that is reasonably secure, it is highly improbable that he will plan to retire from the field after a short period of ruthless exploitation. The individual monopolist may retire from business, but he will seek to sell his privileged position to the best possible advantage. Now the permanent monopoly price, as has been shown, is the price calculated to give the highest value to the monopoly privilege. It is, therefore, the most advantageous to the individual monopolist, whether he desires to remain in the field or to retire from it.

Again, it may be said that the control of a monopoly need not necessarily be exercised in its permanent interest. A band of financial wreckers may gain possession of a majority of the stock in a monopolistic corporation and force prices to the maximum present profit level, to the permanent injury of the monopoly. When the stream of profits begins to subside, the men in control may through false representations succeed in selling their stock on advantageous terms to innocent investors; and these in turn may persevere in the policy of fixing maximum profit prices, with a view to selling their interests on as advantageous terms as possible to still more innocent investors. Obviously, however, this process cannot continue indefinitely. Sooner or later the control of a permanent monopoly must pass into the hands of those who will find it to their advantage to conserve its permanent interests.

That those who control the price policy of a permanent monopoly will, as a rule, be disposed to take future demand into consideration, must, I think, be conceded. But will a monopolist, even if he is willing to sacrifice present profits to future profits, be able to form a sufficiently accurate estimate of future profits to guide him in his

price policy? It is true that the effect of present prices upon the future development of demand and upon future profits is something that cannot possibly be determined with accuracy. But it is equally true that it is impossible to determine with accuracy the effect upon future profits of the present investment of capital in permanent plant. In either case a certain present is balanced against a more or less uncertain future. If the uncertainty of the future does not deter a monopolist from investing capital in fixed plant,—i.e., sacrificing present purchasing power in order to add to his means of creating a future income,—it will not deter him from sacrificing a present profit in order to create a future profit.

It must be granted that the calculations of the monopolist who endeavors to fix prices to his own best advantage will contain a large amount of uncertainty. This fact does not preclude definiteness of statement in a law of monopoly price. It is to be borne in mind that the entire structure of economic theory is a formulation of the interests, not a description of the actions, of economic man. Capital seeks the more profitable rather than the less profitable field, we say. What we mean is that it is to the interest of the capitalist to place his productive wealth in the more remunerative field. That the capitalist always has the knowledge that enables him to do this we cannot assert. Nor can we assert that he always has the will to transfer his funds from the less profitable to the more profitable field. We have a right to assume, however, that, as a rule, men will seek to gain the largest possible income from their capital. Therefore, the law that capital seeks the most profitable fields is a true statement of an actual tendency. The accepted law of temporary monopoly price is not an induction from the observed conduct of the practical monopolist. It is a formula setting forth the price policy that it would pay a monopo-

list to adopt. We cannot suppose that a practical monopolist can actually fix upon the price that yields the highest immediate net revenue. For the more convenient exposition of the theory of the interest of the monopolist we assume that he has better facilities for ascertaining present demand than he can actually have. Our results are, therefore, real only as indicating the standard towards which temporary monopoly prices tend. The law of permanent monopoly price pretends to no higher degree of reality. It exhibits the price policy that a perfectly intelligent monopolist would adopt, and thus throws light upon the standard towards which permanent monopoly prices tend.

VI.

A word as to the practical consequences of the theory of permanent monopoly price. It has often been asserted that monopoly prices—and temporary monopoly prices are the ones in view—are sometimes lower than competitive prices. As permanent monopoly prices are necessarily lower than temporary monopoly prices, it is at any rate not improbable that the former would often be less than competitive prices. Furthermore, it has been shown that the more readily demand responds to present price policy, and the lower the rate at which future income is capitalized, the greater will be the difference between the temporary and the permanent monopoly price, and, naturally, the greater the probability that permanent monopoly price will be less than competitive price. Now there is every reason for believing that future demand grows more and more responsive to present price. Again, there is reason for believing that, even if the general rate of interest does not decline, the rate at which monopolists will discount future incomes will be lower. Our monopolies have been passing through a formative stage,

where whatever capital they commanded could be made to yield very high returns. When each monopolistic enterprise has grown up to its field, so that surplus income can be made to yield only a low return, the monopolist will discount future incomes at a lower rate, and hence will be more moderate in his charges.

It does not follow that monopoly is a desirable factor in our economic life. The monopolies may grow less exacting in the future, yet it may be better to eliminate them altogether, if this is possible. It does, however, follow that a policy which tolerates monopoly without legalizing it is of doubtful expediency. The monopoly that may at any time be dissolved will be little disposed to sacrifice present income to future income. It will evince a tendency to exact from the public the exorbitant temporary monopoly price instead of the more moderate permanent monopoly price. This insecurity, further, deters capital from flowing freely into the monopolized field, and so forces the monopolist to discount the future at a high rate,—another reason for fixing high present prices, regardless of future demand.

On the other hand, whatever tends to place the control of a monopoly in the hands of those who are permanently interested in its welfare makes for lower prices. If the control of a monopolistic corporation rests with a few large holders of non-dividend-paying stock, we have no assurance that a price policy will be adopted that will conserve the permanent interests of the monopoly. For the sake of the consumer as well as for that of the investor it is desirable that a check should be placed upon the existing tendency to divorce the control of a monopolistic corporation from the ownership of the productive capital invested in it.

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AUSTRALIAN ECONOMIC PROBLEMS. I. THE RAILWAYS.¹

SUMMARY.

I. Comparative railway conditions in America and Australia, 400.—History of early railway enterprises, 402.—Railways and public lands, 403.—The leasing system, 404.—Land grant railways in Western Australia, 405.—II. Early history of railway administration, 406.—The commissioner system, 408.—Railway acts, 409.—Status and powers of commissioners, 410.—III. Construction of new lines, 410.—Land revenues appropriated to railway construction, 411.—Local guarantees for new lines, 411.—Early progress of railway construction, 413.—Causes that retarded progress, 414.—Comparative mileage of different colonies by decades, 414.—The gage question, 415.—Description of the state railway systems, 415.—Projected transcontinental lines, 417.—Private railways, 418.—Railway mileage in proportion to population and area, 418.—Railways constructed in advance of requirements, 419.—Distribution of railways, 419.—IV. Accounting methods, 420.—Cost of construction, 421.—Operating expenses and gross revenues, 425.—V. Passenger service and fares, 428.—Description of freight traffic, 429.—Some

¹ BIBLIOGRAPHICAL NOTE.—The only scientific study of early Australian railway policies known to the writer is Doctor Moritz Kandt's *Ueber die Entwicklung der Australischen Eisenbahnpolitik* (Berlin, 1904), which gives a history of railway development and administration in Victoria until government ownership was fully established. The best descriptive and statistical account of Australian railways, their finances and operation, is in T. A. Coghlan's *Australia and New Zealand* (Sydney, Government Printing Office, 1904). Coghlan gives the most reliable comparative statistics. The Report of the New South Wales Commissioner of Railways for 1886 contains a history of the origin and progress of railways in that colony. The various colonial year books and railway department reports have afforded all the other statistics quoted. Data as to recent rates are from the published rate books of New South Wales, Victoria, and South Australia. Parliamentary acts, reports, and debates throw light upon railway history and policies. Interstate competition was discussed fully in the federal convention and the debates of that body and the papers laid before it by state officers give a satisfactory view of the question up to the time federation was accomplished. For later details the federal Hansard should be consulted. The account of Australian railway operations most accessible to Americans is to be found in Professor Hugo Meyer's *Government Regulation of Railway Rates*. But this account, though accurate in most of its details, omits so much that is essential for an understanding of real conditions in Australia as to be but a partial and rather one-sided presentation of the subject, and therefore open to the charge of bias in its conclusions.

This paper, and others to follow, give the substance of lectures delivered at Harvard University.

comparative traffic conditions in Australia and America, 431.—Railway rates, 432.—VI. Interstate competition, 433.—The rate question in the federal convention, 436.—VII. Tapering and development rates, 440.—Inequality of rates, 441.—Rates reduced by political pressure, 442.—The parcel system, 443.—Freight charges, 443.—Comparative rates in Australia and the United States, 444.—VIII. Profit and loss of Australian railroads, 445.—Prevalence of deficits, 446.—Reason for deficits, 446.—IX. Conclusion, 448.

I. EARLY HISTORY; ORIGIN OF PUBLIC OWNERSHIP.

AUSTRALIAN railways are interesting to Americans chiefly as illustrating government ownership. In 1904, of over 14,000 miles of line in the Commonwealth, but 640 miles, or less than $4\frac{1}{2}$ per cent., were owned by private companies. But, before viewing the railways in this relation, we need to note important differences between transportation conditions in Australia and the United States.

In America the great freight-producing regions and the center of population lie far from the coast. Our best agricultural land is in the interior, and our great mineral regions are far from tide-water. Our rural population, as compared with that of Australia, is evenly distributed; our seaports are numerous; our inland waterways are abundant and open for long seasons. In Australia, on the other hand, the arable land lies near the coast, while the interior is arid. The coal districts are near a seaport. There are few natural harbors. No great lakes and but a single river system compete with railways. Through traffic between the great centers of population is coastwise, and meets ocean competition. The eastern and western seaboards of the continent are connected by a shorter water route than we should have possessed, had the Panama Canal been open from the founding of the Republic.

Therefore, Australian railways, as compared with those of America, have few long hauls and little back loading. All their traffic originates along their own course. There is water competition with coastwise lines, and little such competition with those leading to the interior. Settlement thins out rapidly as one leaves the coast, with a corresponding diminution of freight density and passenger traffic. Urban population is concentrated at a few large ports. Grazing, not agriculture, is the leading industry. Copper and lead are the only industrial metals mined; and, tho gold and silver are produced in large quantities, they afford directly but little freight. These conditions make railways naturally less remunerative in Australia than in the United States. The problem of establishing profitable systems, extended enough to tap the scattered resources of the country, is more difficult to solve.

Notwithstanding these differences, Australia, like the United States, has had to build long railways through new and sparsely settled country, to make railways subservient to land development, to borrow capital for these enterprises abroad, and to meet engineering difficulties without the local, mechanical, and technical equipment of long-established industrial communities. These circumstances compelled Australia, like our own country, to build railways with public aid. Australians, also, have had to meet the issue of public control of transportation by a popular government. Therefore, while many conditions were different, the railway problems of Australia were at first practically the same as our own and for this reason peculiar interest attaches to its different way of solving them. In America public enterprise has competed with private enterprise in railway building, and it might have been predicted that we should follow the example of New York, with its great canal, and retain

these works in government hands. In Australia the first railways were private undertakings, and opinion hesitated for a time between public and private ownership. The survival of private railways in America and of government railways in Australia was in each case determined by local conditions rather than by a definite policy on the part of the people or the government.

The first projects for railways in Australia started in England during the decade ending with 1850. The country was still a sheep ranch. Gold had not been discovered, and agriculture was hampered by want of a market. The Suez Canal had not been built, steam navigation was in its infancy, and the colonies were still six months' voyage from the mother country. These projects stimulated agitation for railways in Australia itself. The home government, which retained a strict tutelage over the colonies, became interested, and in 1846 Gladstone sent a circular letter to the governors, advising a uniform railway policy in the Australian possessions, based upon British experience. Among his recommendations were two, generally adopted in Australia, that looked toward definite government control. One was that the public authorities should have power to regulate rates, the other that they should have the privilege of buying the railways at an appraised valuation.

About 1850 New South Wales, Victoria, and South Australia, under laws taken without change or adapted from those of Great Britain, chartered private companies to build short lines out of the metropolis of each colony. The colonists wished to use public lands, which were still controlled by the home authorities, to promote these enterprises. But the Imperial Government steadfastly set its face against this policy. The only concession promised was that railways might buy lands along their right of way at the upset price for which they were offered

at auction. In 1841 this price had been fixed at £1 an acre.

This land policy was probably the decisive influence that turned Australia to government ownership. If crown lands could have been granted to railways, private capital to build them might have been secured from England, and the history of these enterprises would have been the same as in the United States. Because they could not grant land, the colonial authorities had to give the railways other assistance. As private capital in Australia was earning from 20 to 50 per cent. in land and mine speculation, it could not be diverted to less remunerative railway enterprises. English capitalists were not ready to lend money in the colonies to private undertakings of so experimental a character. The distance was too great, the conditions under which investments were made too uncertain. Therefore, the government, pushed on by popular clamor for railway conveniences, subscribed directly for a large share of the stock of private railway companies or made them loans secured by a mortgage on their property. It also guaranteed interest or dividends to private investors. No early railway was undertaken without one or more of these forms of public support.

The companies thus fostered were not successful. In Victoria, the colony most active in railway enterprise, the largest project, the Melbourne and Mount Alexandria railway, never reached the construction stage; and the Geelong railway, which was not completed until 1857, was practically bankrupt when taken over by the government three years later. These failures were due partly to the fact that railways were still experiments, partly to the necessarily high cost of construction, which exhausted their capital. In South Australia and Queensland the private companies did not begin actual work; hence, in

order to provide needed facilities, the government had to build the lines. The final result was the same in all the colonies: the public, impatient for railway conveniences, forced the government to supply them.

The first intention of the authorities was to build the railways, and, when completed, to lease them for operation to private contractors. In Victoria this was recommended by a royal commission in 1854; and three years later the parliamentary railway committee reported: "Under the present circumstances of the country the State must necessarily be entrusted with the formation of the main lines of railway. . . . The management and working of the lines of railway after completion ought not to remain in the hands of the government." In New South Wales the government, after taking over from a private company the first railway built in that colony,—a suburban line fourteen miles long, from Sydney to Paramatta,—leased it to a contractor. The same colony experimented at one time with leasing passenger and freight traffic to different undertakers.

Bad government management in Victoria caused such dissatisfaction that during the early sixties a popular demand arose to place the roads in private hands. In 1863 there were but two parties in parliament, those who wanted to sell outright and those who still had faith in the leasing policy. The latter secured a law providing that the government lines be rented for seven years to the highest bidder. The government delayed putting the act in force, ostensibly in order to get information and sample contracts from Europe, where the same system had been adopted. Meantime a body of employees and others interested in government management became influential with the ministry, and ultimately with parliament. As early as 1865 there was a party in favor of government operation, which secured accessions from

members representing districts seeking new lines. By 1867 the improved financial condition of the colony and the demand for railway extension, together with more satisfactory service as the government acquired experience in railway management, changed popular sentiment in favor of government operation, and the agitation for leasing died out.

Western Australia affords an exception to the rule that railways were not built by land grants. In 1878, when the first line was constructed in that colony, it had less than 30,000 inhabitants, occupying a territory of nearly a million square miles. Parliamentary government had not been established, and conditions were unfavorable for public loans. But the colony had vast assets of crown land. Consequently, in the lack of public funds, land was granted private companies to build two trunk lines, running from the Swan River district, where Perth, the capital and chief city, is located, south and north respectively to Albany and Geraldton. The lines were both built, and one of them still remains in private hands. The other and more important road, from Perth to Albany, has been resumed by the government, principally because the railway company would not open its land for settlement.

In 1892, after the state railway system was well established, Queensland passed an act permitting the government to grant land to private companies for the construction of railways under one of three conditions: (1) the railway to become the property of the government without compensation at the end of a term not exceeding fifty years; (2) or the railway to become the property of the government as soon as completed; (3) or the railway to remain private property, subject to right of purchase by the government on appraisement, under conditions stipulated in the contract between the railway depart-

ment and the builders. In the first case public land along the proposed line may be granted, at a price estimated without including the increase of value due to the railway, to the amount of twice the cost of construction. In the second and third case the value of the land that may be granted is to equal the cost of construction. If operated by a private company, railways built under these conditions must maintain continuous service with the government railways. A line cannot be sold or leased by the original company without the consent of the government. The public authorities reserve the right to lower rates, but not below a minimum of four cents a mile for passengers and six cents per ton a mile for freight. The company is forbidden to discriminate in rates or services between patrons of the road.

The Australian governments undertook the construction of railways more readily because from the days of convict labor they had built the principal highways and bridges. A central road board was in charge of this work in each colony. The government also appointed officers to represent it on the directorate of private railways, in which it often owned controlling stock. From these sources it was easy to organize a railway department. Victoria placed her first lines in charge of the commissioner of public works and the surveyor-general, who were the state highway authorities. Later they were placed under a board of lands and works, including the responsible minister and the manager of the lines.

II. ADMINISTRATIVE PROBLEMS; THE COMMISSIONER SYSTEM.

The early essays at public control were far from satisfactory, either to the people or to the government. There was much wasteful expenditure. Lines were built for

political rather than for commercial reasons; stations and sidings which not only brought no profit to the government, but were a source of loss, were established at the call of private interests. Trains stopped so frequently that their schedules were complicated and traffic slow. Trains were put on that did not pay. The service was loaded down with unnecessary employees. It was even charged that construction contracts were manipulated.¹ What we should call secret rebates were granted to favored shippers.² Some of these charges were never proved, but they came up at different times and were probably in the main justified. There is hardly an abuse in American railway administration and traffic arrangements that could not be matched with a similar abuse in the history of Australian railways. But in Australia reforms responding to specific exigencies have been made from time to time, and a body of precedent based upon long experience in government administration established, which now fairly meets most of the early administrative errors.

After the first more or less chaotic organization of public railway departments in Victoria and New South Wales the control and administration of railways was delegated to responsible ministers, who appointed a general manager directly to operate the lines. Under this system many successful railways were built, and a fairly efficient service maintained. But political evils grew up. Favoritism appeared in the various departments, and roads were constructed and employees engaged to pay political debts or to secure political support. So late as 1897 a delegate at the federal convention felt justified in saying "the railways of the past seem to have been treated as state machines erected for political purposes rather than as commercial undertakings."

¹ The contractors took away the government's inspectors by paying them higher salaries.

² By means of false bills of lading.

To remedy this evil, in 1885 Victoria placed her railways in the hands of three commissioners appointed by the governor in council under authority of an act of parliament. These commissioners were made fully responsible for the construction, maintenance, and administration of the railways. They could be suspended only on specific charges and removed by parliament itself. In 1887 South Australia, and in the following year New South Wales and Queensland, adopted a similar system. Later Queensland, Victoria, and South Australia reduced the number of commissioners to one. In 1903 Victoria returned to three commissioners a second time. The number of commissioners, however, chiefly affects convenience of administration and has nothing to do with the principle of independent management. At the time this new policy was adopted by the leading Australian colonies, Western Australia did not yet have responsible government, and its railways were administered by a commissioner who was a member of the governor's council. After responsible government was introduced, the commissioner became one of the ministers in parliament, appointing a general manager who directly administered the railways. This system, practically the same as that of the other colonies before commissioners were introduced, proved unsatisfactory, and in 1902 that colony also followed the example of the older states of the Commonwealth. Tasmania still administers her railways in the old way through a general manager appointed by the minister of public works. And New Zealand has returned to the responsible minister system after eight years' experience with commissioners between 1887 and 1895.

In South Australia the railway commissioner reports directly to parliament, in the other states to a minister. The railway minister, where there are independent commissioners, simply directs legislation, and represents the

railway department in parliament. He has no authority to interfere in railway management. In theory, and largely in practise, politics and railway administration are entirely separate. However, the ministry as a whole, as the executive representative of parliament, can veto a commissioner's policy. When the commissioners of three colonies entered an agreement regulating competitive inter-colonial traffic, in 1895, the Victorian government disallowed the act of its commissioner, as affecting interests outside the railways proper.

The independent railway commissioners of each state are a body corporate, in whom its railway property is vested. Their liability for accidents and other claims is limited by law. No commissioner can be dismissed except by parliament, and he can be suspended from his functions only for specific reasons enumerated in the railway law. A commissioner or railway officer participating or claiming to participate in a profit from any transaction relating to the railways is guilty of a misdemeanor.

The railway acts in the different states prescribe the duties of railway commissioners, and regulate with some detail certain items of management. In Western Australia the commissioner is permitted to use any motive power he considers advisable, to facilitate and regulate accident insurance on the railways, and to collect freight for the railways from points off of the lines. In all these respects the state laws are practically uniform. The New South Wales law requires the commissioner to investigate all railway accidents and report to the minister. If the report is not satisfactory, a commission is appointed, consisting of a district judge or other magistrate with assessors, to investigate the accident more thoroughly. The right of the commissioners to regulate freight charges is thus qualified in New South Wales. "No reduction or advance in any such tolls shall be made either directly

or indirectly in favor or against any particular company or person travelling upon or using the railroad."

The commissioners have full control of railway management under the railway law. This includes maintenance and operation, appointment and dismissal of employees, fixing freight and passenger charges, issuing regulations governing traffic, and practically all matters controlled by the directors and managers of American railways. The appointment of employees, except a limited number of casual hands, is governed by a civil service law. Promotions are also regulated by statute, but are flexible enough to assure efficiency. Employees who have been fined, suspended, or dismissed by a superior officer, may appeal to a special board constituted under act of parliament whose decision is final. Where there are three commissioners, they usually constitute this board.

Appropriations for new lines are made by parliament. There is usually a standing committee on railways, to whom all railway projects are referred by the minister responsible for this department with estimates and plans submitted by the commissioners. The committee takes testimony as to the probable cost and profit of the proposed line, its relation to land development, and other matters of public interest. Parliament usually adopts the committee report without important modifications.

III. CONSTRUCTION, MILEAGE, GAGE, DENSITY.

The construction of new lines is sometimes in charge of a distinct department of the government. In Victoria, from 1884 to 1891, the railway commissioners both built and managed the lines, but in 1892 railway construction was transferred to the board of lands and works. About 1900 Western Australia transferred the control of capital

expenditures, previously in the hands of the railway department, to the department of public works; but in 1903 the commissioner of railways was again given authority to build new lines, subject to the approval of the minister. The same system prevails in Queensland.

It is now the policy to make lands increased in value by new railways pay part of the cost of their construction. When the first railway projects were under consideration in Victoria, Governor Hotham proposed a general scheme including two fundamental principles,—that no road be undertaken without at the same time providing for the eventual payment of loans incurred for its construction; and that crown lands adjacent to the road should be sold at a price that would repay these loans within twenty-one years.

This policy was lost sight of in the railway controversies following responsible government. During the fever of land speculation, settlers secured possession of crown lands before projected railways were authorized. But about 1877 Victoria inaugurated the practise of applying £200,000 annually from land sales to railway capital. In 1889 the New South Wales railway commissioner recommended that one-half the proceeds from the sale of crown land along proposed railways be devoted to paying the cost of construction. This has not been authorized by parliament, but on some recent lines the "betterment" principle has been applied by administrative regulation. Adjacent lands are assigned an increase of value according to their distance from stations theoretically ten miles apart.

In order to place the burden of possibly unprofitable lines upon those directly served rather than upon the whole community, laws have been passed in Victoria and Queensland making the local authorities partly responsible for the cost of branches solicited by them. These laws help the government to resist political pressure for

lines through districts where the traffic is not likely to pay interest upon the cost of construction.

The Victorian law on this subject, the Railway Lands Acquisition Act, was passed in 1893, but has since been amended. After parliament authorizes a line, and it is shown that the tax-payers along the proposed route desire its construction, the governor prescribes a railway construction district, covering the territory through which it passes, and may appoint a railway construction trust, composed of members of the local councils of the district. The trust is authorized to purchase such private lands as are required for the proposed railway. To do this, the trust borrows money on its own debentures from the state railway construction fund. This fund is derived principally from state railway loans. The trust must provide for the payment of its debentures, and may levy a special tax upon the real property of the district for this purpose. The land tax may vary in different parts of the district, "in proportion to the advantages or benefits appearing to accrue to the land by the construction of such line of railway." The sinking fund must be invested in Victorian public bonds. Construction cannot begin until the trust has conveyed to the state railway department a clear title to the lands required. The railway commissioners are required to charge local fares and rates upon the new line, and to keep a separate income and expense account of its operations, until the line pays working expenses and 4 per cent. upon its capital cost. Lines entirely within urban districts may be built either in this way or subject to a guarantee by the municipal authorities to make good to the government all deficits below working expenses and 4 per cent. on capital investment for a period of twenty years.

In 1895 Queensland passed a Railway Guarantee Act with general provisions not unlike those for urban branches

in Victoria. Local authorities in districts served by the proposed line obligate themselves to pay one-half the deficit in operating expenses and 4 per cent. upon the capital cost of the line for a term of fourteen years. The funds for this must be raised by taxation. When there is a surplus above aggregate operating expenses and 4 per cent. on the capital cost since the date of completion, one-half this surplus is returned to the tax-payers. If a line pays working expenses and interest for three successive years, the government may release the guarantors from their obligation. During the first ten years this law was in force only four short lines were built under its provisions. Three of these were non-paying.

In both Victoria and Queensland these guarantee acts contain very carefully framed provisions to prevent local districts from assuming the obligations without the consent of the tax-payers. The latter are in all cases allowed a chance to vote upon the question directly, and a clear majority must be shown in favor of obligating the district before the railway department is authorized to act further.

The conditions that caused the failure of early private railroads in Australia, especially the high cost of labor and materials during the gold excitement, also retarded public railway construction. In 1854 in all Australia there were but $2\frac{1}{2}$ miles of line open for traffic, and ten years later only 469 miles. During the following decade railways were built at the rate of about 100 miles per annum.

This slow rate of construction during the early years of railway building compared unfavorably with the enterprise shown by the United States and Canada. Sir Charles Dilke, writing of New South Wales and Victoria in 1867, said: "The want of railways is incredible. There are but some 400 miles of railway in all Australia, far less than the amount possessed by the single infant state of

Wisconsin. The sums spent upon the Victorian lines have deterred the colonists from completing their railway systems. £10,000,000 were spent upon 200 miles of road through easy country in which land cost nothing. The United States has made nearly 40,000 miles of railway for less than £300,000,000. Canada made her 2,000 miles for £20,000,000, or ten times as much railway as Victoria for only twice the money. Cuba has already more miles of railway than Australia."

The slow progress of the railways in the first decades of construction is ascribed by Coghlan to the difficulty of the government in obtaining funds. After 1874 progress was more rapid. By 1884 the total mileage was 5,855 miles, and this was nearly doubled ten years later. Since 1896 construction has been slower. The great era of railway building in Australia was between 1887 and 1889, when the average rate of construction was between seven and eight hundred miles per annum. In 1903, in the midst of a great drouth, the mileage slightly decreased. It was not until 1883 that Sydney and Melbourne, and 1886 that Melbourne and Adelaide were connected by railways. In 1889 the completion of a bridge over the Hawkesbury River enabled connecting trains to be run from Adelaide to Brisbane.

The number of miles open in each colony by decades from 1871 is as follows:—

	1871.	1881.	1891.	1901.	1904.
New South Wales . . .	358	1,040	2,266	3,107	3,362
Victoria	276	1,247	2,903	3,302	3,381
Queensland	218	800	2,320	2,903	3,030
South Australia	133	845	1,823	1,901	1,901
Western Australia . . .	—	92	657	1,990	2,170
Tasmania	45	168	425	618	620
Total	1,030	4,192	10,394	13,821	14,464

These roads are of three gages. All the railways of Queensland, Western Australia, and Tasmania, 1,238 miles of the South Australia lines, and some branches in New South Wales and Victoria are narrow (3 feet, 6 inches) gage. The standard gage of New South Wales is 4 feet 8½ inches, and of Victoria 5 feet 3 inches. The South Australian lines from Adelaide to Melbourne and their branches (some 594 miles in South Australia) are the same gage as the Victoria roads.

This difference of gage is a great embarrassment to interstate commerce. It is necessary to transfer passengers and freight at the Queensland and Victoria borders of New South Wales. A similar transfer is necessary for freight passing from the narrow to the broad gage lines of South Australia, tho the inconvenience is less felt because these lines center in Adelaide. Conferences have been held for the purpose of adopting some method of securing uniform lines. It has been suggested that the wide 5 feet 3 inches gage of Victoria and South Australia be narrowed to the 4 feet 8½ inches standard of New South Wales and the narrow gage of Queensland widened, the expense being borne jointly by the railway systems of the states interested. The disadvantage of different gages would be peculiarly felt in time of war. Something of the cost involved in the transshipment of freight is indicated by the following junction charges at Albury, on the frontier between New South Wales and Victoria, for goods passing in either direction: live-stock, 2s. a truck; wool, 3s. 6d. a ton; wheat, 6d. a ton; all other goods, 2s. 6d. a ton.

Except for the break of gage the roads of South Australia, Victoria, New South Wales, and Queensland, form a connecting system. The railways of each state have been extended from its metropolis toward the interior and along the coast, the direction of development being determined by the desire to tap specific resources rather

than to reach interior markets. Long lines to inland pastoral districts have been built, partly to guard against the destruction of flocks in time of drouth.

The Queensland railways extend inland, perpendicularly to the coast, for three or four hundred miles, in three distinct systems. These lines lead directly to pastoral districts and are not interconnected, their only object being to make an outlet to the sea. There are also short railways penetrating the mountains to mining districts along the northern coast.

The lines of New South Wales spread out symmetrically from Sydney to the north-west, the west, and the south-west, in three systems. Originally the roads radiating from the Newcastle coal district were disconnected from those of the metropolis. The line to Bourke, upon the Darling River, extends directly westward 500 miles, reaching the remotest point from the sea attained in the state. The lines to the north connect with the Queensland railways, and a railway to the south connects with the Victoria lines at Albury.

Victoria is the best supplied with railway facilities in proportion to its area of any of the colonies. Many lines radiate from Melbourne. A north line connects with New South Wales, and a west line with South Australia. The object of the interior extensions, in this state, has been to reach the water traffic along the Murray and Darling Rivers, from which freight is drawn to Melbourne which belongs politically, if not commercially, to New South Wales and South Australia.

The South Australia railways consist of lines along the coast, through agricultural districts to the Murray River, and thence to the Victoria frontier, with a long narrow gauge railway extending inland 834 miles to Oodnadetta. This road serves the pastoral districts of the interior, and a branch extending to the border of New South Wales,

and connecting with a private line at that point, taps the rich Barrier mining district of the latter state.

Western Australia, besides the trunk line from Albany to Perth and a private railway northward near the coast, has a short coast line south of Perth, between the mountains and the sea, serving a rich agricultural and forest district, and two long systems to the interior gold fields. These last lines pass over semi-arid country, have almost no local traffic, and one of them is paralleled for over 300 miles by a pipe line conveying water to the mines.

Two transcontinental railway projects are now before the colonies. In 1902 the South Australian parliament authorized a proposed north and south continental line 2,000 miles long through that state and the Northern Territory. This involves building something like 1,100 miles of light narrow gage track from Oodnadetta, the northern terminus of the present system, to Pine Creek, where it would connect with a short line already built to Palmerston on the north coast. It is proposed to grant one-half of the land in a strip 20 miles wide along the railway to the contractors undertaking its construction. On account of the aridity of the country through which the line passes, this land would have little value for agricultural purposes; but it might be used for scanty grazing. The main speculative value of such property would arise from mineral rights. On the other hand, the line presents few engineering difficulties except that of water supply. It is not the intention of the state to have this line operated by the builders, whose ownership would cease as soon as the land granted for its construction was transferred to them.

Another line, to connect the South Australian railway system with that of Western Australia which already penetrates the interior nearly 400 miles to Kalgoorlie, has been proposed as a federal undertaking.

Disregarding timber and mine railways not open to public traffic, the only state in which private lines have recently been built is Queensland, which has a new private railway, 102 miles long, from Maruba to Chillagoe. New South Wales has three short private lines. One, 45 miles long, was constructed under government permit in 1874. It runs through rich pastoral country to the Murray River, where it connects with the Victorian railways. It has been profitable, and used to pay 10 per cent. dividends. Another, 35 miles long, is from the important Broken Hill mining district to the western border of New South Wales, and connects with the South Australian lines. This railway paid as high as 70 per cent. dividends in 1891, and has recently been paying 20 per cent. Victoria has had no private lines of importance open to public traffic since 1878. In South Australia there were recently three private railways, all of trifling importance. Western Australia has the only private trunk line, 277 miles long. It is operated by the owners under government supervision. Tasmania still has 160 miles of private railway,—a relatively important fraction of her short system.

Mr. T. W. Coghlan, for many years chief statistician of New South Wales, is the authority for the following comparison of railway mileage in proportion to the population and area of different countries and of the two most important states of the Commonwealth:—

	<i>Population per mile of railway.</i>	<i>Area per mile of railway.</i>
Victoria	357	26
New South Wales	426	93
Australian Commonwealth	272	206
United States	358	17.5
Canada	285	191.8
Argentine	457	103.3

South Australia claims to have more railway in proportion to its population than any other country. In 1899 there were $53\frac{8}{10}$ miles of line for every 10,000 inhabitants, as compared with 26 miles in the United States.

Such comparisons are not of much significance, as mileage is not necessarily an index of railway service. Australia has tremendous areas of unsettled and largely desert country, not likely ever to be well populated. Hence in a comparison of railway facilities based upon the ratio of mileage to territory she makes a poor showing. On the other hand, with a population as widely dispersed as that of Australia, where less than 4,000,000 people are settled over an area approaching one-third that of the United States with 80,000,000 people, the needs of the country cannot be served without a mileage large in proportion to the number of inhabitants. But, under these conditions, railways are of light construction and narrow gage, with irregular or seasonal train service. The South Australian and Queensland lines, penetrating the interior for 500 and 800 miles, do not run daily trains, and at certain seasons there is a practical cessation of traffic over their rails.

Many lines have been built in advance of requirements. Political pressure is partly responsible for this. Rusden, the historian of Australia, says of the earlier period: "The facility of borrowing money in England to construct railways was largely availed of, at first with circumspection as to probable remuneration from traffic, afterwards with less calculation. Each district marshalled its forces to obtain lines. Ministerial necessities encouraged the demand. Loans afforded the supply. It was accepted by all that railways could only be constructed by means of loans, and every hamlet put forward a demand for its branch line. It was difficult to satisfy all, but vigorous efforts were made to win political support."

The result is that part of the railways of Australia do not serve a commercial need large enough to support them. The cost of constructing these roads has lessened the ability of the government to provide facilities in other sections where railways are really needed and are likely to be profitable. Economies that have been made necessary on all the lines have caused hardship to railway patrons.

However, in Australia there has been no wasteful construction of parallel lines in excess of traffic needs, and upon the whole the mileage is as well distributed as in this country or Canada. The Australian railways are now fairly adequate to the requirements of the country. With a uniform gage, more interstate connections, and the completion of the transcontinental lines, they would meet the reasonable needs of the present population and industries.

IV. ACCOUNTS AND STATISTICS, EXPENSES AND REVENUE.

The statistics of Australian railways are embodied in quarterly and annual reports laid before parliament by the railway departments. Those of different states are only partly comparable. For several years the commissioners, at their annual conferences, have tried to unite upon a uniform system of accounts, similar in a way to the uniform system of census statistics devised by the conferences of colonial statisticians. But these efforts have not yet resulted in fully comparable data of railway operations. And the earlier state reports do not present even approximately similar items.

Critics of government railway accounting in Australia have usually attacked the division of capital and income expenditures. In order to show more favorable results

from operation, railway authorities are said to have paid expenses from capital that properly should have been paid from earnings, thus lessening apparent deficits.

The desire to make future maintenance expenses as low as possible has caused some commissioners intrusted with the direct construction of railways to build them more solidly and expensively than immediate requirements justified. This method shifts legitimate operating expenses over to interest charges.

A serious tho not common fault in accounting has been to allow rolling stock, stations, and other permanent works usually maintained from income to depreciate, while still crediting them to capital at their full value. In 1902 a royal commission investigating the management of the Victorian railways found them credited with nearly \$2,500,000 worth of locomotives that had been discarded, and a general depreciation of rolling stock, amounting to \$7,852,513, unnoticed in the accounts.

On the other hand, in 1904 the commissioner of railways of New South Wales reported that during the previous six years the rolling stock of the tramways under his charge had been increased one-third from earnings.

There is room for honest difference of opinion as to the items to be charged to capital, and practise varies in different states. The commissioner of railways of Western Australia reported in 1902 that different classifications of capital account and interest charges, and of working and renewal expenses, made it impossible to compare the financial statistics of state railways. In Western Australia capital is charged with discounts and other costs of raising loans. How important an item in capital this may be is indicated by the fact that New South Wales has sold her railway bonds on an average for 96.45 per cent. of their par value. In Western Australia, again, so long as the department of public works built the railways, the

appropriations for the latter were charged with their share of the administrative expenses of that department. The commissioner estimated that this was thirty times what the railway department would expend under the same head if it constructed the lines directly.

The capital investment in Australian railways is sometimes confounded with the loans issued for their construction. But most of the states have paid part of the cost from revenue. Victoria has expended upon her roads something like \$19,000,000 from revenue sources, of which \$14,000,000 was derived from the sale of public lands. As long ago as 1892 New South Wales had expended upon her lines, from revenue, nearly \$25,000,000. In 1894 South Australia had spent upon her railways nearly two and a half million dollars from general revenue, and some \$58,000,000 from loan expenditures. In 1901 Western Australia had expended on its railway system \$2,000,000 from revenue and other sources, and \$33,000,000 from loans.

Some administrative expenses that in private railway operation are paid from income, in Australia are provided for from the general budget. Among such charges are the salaries of the commissioners and of the minister and the administrative expenses of the railway minister's office. In Victoria the pensions of employees are not paid from working expenses.

To secure accurate accounting, different states have passed laws and commissioners have provided administrative regulations governing railway book-keeping. To prevent the application of appropriations for capital to working expenses, Victoria requires a special act of parliament to charge the relaying of a track to the capital account. Such replacements of old works have been charged to capital in Western Australia, tho the practise is now discontinued. The provision, so frequent in Australian laws, placing construction of new roads in

charge of the commissioner of public works, a department independent of the railway authorities, has been dictated by the desire to prevent the application of appropriations for construction to other purposes.

Under the official regulations in Victoria no expenditure from capital is legal unless it has been approved by the commissioner in accordance with a prescribed form. In case of replacements, such as relaying tracts and rebuilding bridges, if the new work simply restores the railway property to its original condition, the entire cost is charged to operating expenses. If the replacements constitute improvements, such as relaying a track with heavier rails, or replacing a wooden bridge with steel or concrete, the cost is charged to capital, and working expenses are credited with the value of the old materials.

The apparent revenues of Australian railways are lessened by their performing, without charge, such public services as carrying government freight and government employees travelling upon official business. Railway materials imported by the states pay federal customs duties. State railways charge the federal postal authorities for carrying the mails.

In comparing the cost of building the railways of Australia with those of other countries, special conditions need to be considered. Early Australian lines were built in the midst of the gold excitement, when labor and materials were abnormally high. To build the first fourteen miles of railway in New South Wales cost six times the preliminary estimate for building 134 miles, or nearly a quarter of a million dollars a mile. The line was a suburban road near Sydney, presenting no engineering difficulties. Laborers from England were imported to complete it. Such extraordinary conditions not only checked construction at the time, but still record them-

selves in railway finance by raising the present average cost per mile.

New lines have been built at less expense, and, as economies of construction have been adopted for recent extensions to the distant interior, where only light traffic is expected, the investment per mile is reduced as the system grows. During the nine years ending with 1874 the cost per mile for all lines in New South Wales was lowered from \$93,564 to \$82,655. The capital cost per mile, in the two principal colonies and in the United States, was as follows for the two dates mentioned (Coghlan's figures):

	1874.	1904.
New South Wales	\$82,655	\$62,731
Victoria	102,896	59,330
United States	60,965	62,386

The greater cost in Victoria in 1874 was due to the fact that the colony had extended its railways rapidly in the early days of expensive construction. But the decrease in capital investment per mile was equally remarkable in both colonies during these thirty years, while it was very slight in the United States.

High as was the cost of the early government railways, it was less than that of private lines. In Victoria the comparative cost of building and equipping was as follows during three years when private railways were still important in that state:—

Year.	Cost of public railways per mile.	Cost of private railways per mile.
1865	\$171,641	\$234,253
1866	173,050	241,747
1867	207,996	243,416

The average cost of railway construction for the entire Commonwealth is lessened by the fact that narrow gage and pioneer lines compose about one-half of its total

mileage. On the other hand, as no iron is mined and no steel made in Australia, all railway material must be imported, charged with heavy freight. Omitting these factors, the latest available figures in 1904 showed the average cost per mile of lines open for traffic to be as follows: Australia, \$47,670; Mexico, \$45,829; Argentine Republic, \$49,703; Cape Colony, \$50,453; Canada, \$60,390; and the United States, \$62,386. The expenditure in Australia was therefore lower than in any other of the countries mentioned except Mexico with its cheap labor. Such figures have only approximate accuracy,—for the definition of capital investment is very different in different countries,—but they indicate that the cost of railways in Australia has not been excessive.

As with cost of construction, so, in estimating the expenses of maintenance and operation, allowance must be made for the great variation of gages and of physical and traffic conditions on different Australian railways and on different portions of the same system. Where traffic is light, especially where trains are irregular and carry but small loads, the ratio of operating expenses to gross earnings is higher than where traffic is dense. This is especially true of Australia, since it is imperatively necessary to charge a low rate upon merchandise from remote interior districts, in order to make any industry profitable in those regions. Where rates are low under such circumstances, the ratio of operating expenses to gross earnings must be high. It costs as much to keep in repair the 800 miles of narrow gage line to Oodnadetta, with two or three light mixed trains a week over its northern half, as it would to maintain a line with daily traffic. It costs more to operate trains in this remote district, especially in proportion to the freight carried, than on lines near the coast. In Western Australia wages of railway employees are higher in the interior, where traffic is light, than on the

coast, where freight and passenger business is relatively heavy.

Another reason why the ratio of operating expenses to gross revenues might be high in Australia, as compared with countries under private ownership, is that these railways are not usually run to pay a profit on capital. The common policy is to afford railway facilities to the people for something less than actual cost, supplying the deficit from general revenues. This makes the gross income low, and consequently raises the proportion of that income used to operate and maintain the roads.

The railway authorities of all the states are required by law to charge maintenance to working expenses. This requirement, evaded occasionally in the past, is now generally enforced. Maintenance costs from a fifth to a fourth of the total expenditure from railway revenue. Climatic conditions, such as the absence of frost and of floods and snow blockades in most parts of the country, favor lower maintenance charges than in America.

In 1865 the ratio of working expenses to gross revenue was 65.60 per cent. in New South Wales and 45.72 per cent. in Victoria, as compared with 51.65 per cent. in Great Britain. In 1874 the same figures were, for New South Wales, 48.03 per cent.; for Victoria, 52.36 per cent.; for Great Britain, 55.60 per cent.; and for the United States, 63.60 per cent. The Australian figures were rendered more favorable by the high charges for railway service then possible in the colonies. Before the railways were built, team freighting had cost about 65 cents per ton a mile in Victoria.

At times operating expenses have increased abnormally through lax management. Roads become overloaded with employees, and expensive and unnecessary service is given that makes no adequate return in revenue. Such a period of high expenditure occurred in New South

Wales about 1888, when the ratio of working expenses to income reached 66.69 per cent. Five years later, under a reform administration, it was reduced to 56.58 per cent. without increasing railway charges. Similarly, during the three years ending with 1898, Victoria reduced its annual working expenses about \$1,000,000, tho 200 miles of additional line were in operation at the latter date.

In 1904 the ratio of working expenses to revenue for all the railways of Australia and for Canada and the United States was as follows:—

<i>Country.</i>	<i>Per cent. of income used for working expenses.</i>
Canada	70.25
United States	64.86
Australia	63.68

Average working expenses for the Commonwealth are increased by the high cost, in proportion to revenue, of working the narrow gage lines in the interior of Queensland, South Australia, and Western Australia. The average ratio of operating expenses to revenue in Tasmania is about 75 per cent.

The character of the traffic on Australian railways has varied at different periods, and presents great diversity in different states. In New South Wales and Victoria, passenger traffic was a main source of revenue so long as the lines were confined to the more densely settled districts in the immediate vicinity of the larger cities. Later, with the rapid extension of railways into sparsely settled pastoral country and agricultural districts opening for development, freight traffic attained a relative importance much greater than at the earlier period. Now, with the growth of settlement in the interior, passenger traffic again affords a relatively large proportion of the revenues.

V. RATES AND FARES, TRAFFIC CONDITIONS.

The distinctive feature of Australian passenger service in all of the states except Tasmania is the importance of suburban traffic, the natural consequence of the concentration of population in large cities. Altho a country of magnificent distances, the average passenger journey is something like one-third the average journey in the United States, or approximately ten miles as compared with thirty.

It is impossible to make a flat comparison of railway fares in Australia and America for three chief reasons. First, the Australian railways have two classes, for which separate coaches are provided. Second, there are different kinds of tickets for the same class, as for workingmen and for school children, and return, circular, and season tickets. Third, in Australia the large ratio of suburban to local and through traffic reduces fares.

The accommodation provided for first-class passengers on most of the Australian railways is about the same as on day coaches of the better class in the United States. My experience upon the railways of all of the states except Tasmania was that there is nowhere as poor accommodation as upon the many branch lines and local trains in the South and West and even in parts of New England. Nowhere are there as dirty cars as on some of our Southern railways. On the other hand, the Australian roads do not afford the comforts and luxuries of our through trains, and the sleeping-car service, while affording more privacy, is, upon the whole, less convenient. The direct first-class fare from Melbourne to Sydney, 581 miles, is 80 shillings, about \$16, nearly as much as the fare from New York to Chicago, almost double the distance. From Melbourne to Brisbane, over 1,200 miles, the fare is 160 shillings, about \$40. But in both these cases the return fares are

but one and one-half times the direct fare, and the second class, which affords very comfortable travelling, is 25 per cent lower.

In 1892 suburban passenger fares were lower in the vicinity of Sydney than of London. For typical 5-mile journeys the lowest London rate was 16 cents, the New South Wales rate 12 cents. For 10-mile journeys the London rate was 32 cents, and the New South Wales rate 24 cents. For typical 20 mile journeys, the lowest London rate was 66 cents, and the New South Wales rate 49 cents.

Freight traffic is so different in different states and on different branches within the same state that it is difficult to describe it more specifically than to say that it is confined largely to such commodities as minerals, timber, hay and forage, and wool. Wool is the most valuable in proportion to bulk, and in the pastoral states normally yields a large fraction of the freight revenue.

General merchandise, however, nearly always supplies a large part of the income from freight. In 1905 in New South Wales coal and shale furnished over 60 per cent. of the total freight tonnage; grain and flour, 8 per cent.; firewood, $3\frac{1}{2}$ per cent.; wool, something less than 3 per cent.; hay and fodder, over 2 per cent. The only one-fifth of the tonnage was general merchandise, this class, on account of the higher rates received per ton, furnished in the neighborhood of two-fifths of the freight revenue. In New South Wales, wool, tho affording relatively a small fraction of the tonnage, as early as 1876 paid more revenue than any other commodity.

In South Australia in 1907 about one-half of the tonnage was minerals, two-sixths general merchandise, and one-sixth grain. Wool afforded but little over one per cent. of the total tons carried. The receipts from minerals were about 35 per cent. of the total freight receipts, while those from general merchandise were about 45 per

cent. The South Australian lines carry more agricultural produce proportionally than any other state. One-third of the total freight (532,333 of 1,515,621 tons) is carried to and from the Barrier mining district of New South Wales. The total freight receipts of the colony were \$8,777,053, of which wool paid but \$154,930.

Western Australian traffic conditions are unique in that about one-half of the freight tonnage is supplied by timber and firewood. Ores, brick, limestone, and similar crude commodities furnish one-fourth the tonnage, and general merchandise less than 10 per cent. This condition results from an enormous territory, occupied by a sparse population devoted to mining and lumbering.

The following figures, in so far as they relate to the Commonwealth, are based upon Coghlan's correction of comparative railway statistics for 1904. They have been compared with similar figures for the United States in 1906.

COUNTRY.	Passenger Journeys.		Tons of Freight.		Per Cent. of Total Revenue from	
	Total.	Per Capita.	Total.	Per Capita.	Passengers.	Freight.
New South Wales	33,702,689	22.6	6,656,759	3.4	41.98	58.02
Victoria	54,282,003	44.5	3,439,203	2.8	47.73	52.27
Queensland ¹	4,144,314	7.8	1,572,226	2.9	37.94	62.06
South Australia	9,751,065	25.7	1,521,830	4.0	32.55	67.45
Western Australia	10,225,976	40.1	2,281,764	8.0	31.06	68.94
Tasmania	814,483	4.5	418,701	2.3	46.52	53.48
COMMONWEALTH	113,010,530	27.8	15,890,483	3.9	40.96	59.04
UNITED STATES ²	797,946,116	9.5	1,631,374,219	19.4	26.64	70.78

This table indicates clearly the wide variation of traffic conditions between the United States and Australia and between different states of the Commonwealth. The

¹ Passenger journeys do not include travel on season tickets.

² Per cent. of revenue does not include certain undistributed receipts from operation.

average Australian makes nearly three times as many railway trips as the average American; but they are mostly upon suburban lines and for short distances. As the average trip in America is about three times as long as in Australia, the amount of passenger travel per capita is nearly the same in the two countries. Steam railways perform a large part of the street-car service in Melbourne, and this accounts for the large number of journeys per inhabitant in Victoria. The state now proposes to electrify these lines. Gold-fields traffic and the suburban travel between Perth and Freemantle increase the number of trips per capita in Western Australia.

The figures for freight traffic are even more important as illustrating comparative conditions of railway economy. The per capita freight tonnage of the Commonwealth is only one-fifth that of the United States. The grazing states have a lower tonnage than South Australia, with its larger share of agricultural produce and ores; and Western Australia, with its forest and mine resources large in proportion to population, has half the per capita tonnage of America. This fact needs to be remembered in connection with another to be mentioned later,—the Western Australian railways are the only lines that have regularly paid interest on their capital during the last decade.

Passenger and freight service are opposed to each other in Australia in that for the former short hauls and for the latter long hauls pay the lower revenue. Passenger traffic pays a larger per cent. of the total railway income in Australia than in America.

Compared with America, the average haul in Australia is short, and the average train load light. The following table gives comparative train loads in the United States and in the only two states of the Commonwealth whose railway reports afford these figures:—

	1901.	1902.	1906.
United States	294,70 tons.	308.19 tons.	344.39 tons.
South Australia	75.42 "	69.08 "	89.94 "
New South Wales	69.40 "	66.30 "	— "

In 1906 the average haul in the United States was 132.33 miles, as compared with 117.41 miles in South Australia. In 1904 the average haul in New South Wales was but 60.7 miles. This was partly due to the very short haul—17.47 miles—of coal, which furnishes 60 per cent. of the freight tonnage of that state.

The smaller train load in South Australia is partly accounted for by the narrow gage. But lighter trains and shorter hauls, as compared with the United States, are due primarily to the concentration of population and industries in the coastal districts for climatic reasons, combined with scanty traffic through the sparsely settled interior. The uneven distribution of business that results, both along the same line and in different parts of the country, should not be charged, as is sometimes done, to the administrative policies of the railways, but to natural conditions that cannot be modified by railway management.

The same conditions account for the relatively denser traffic in the United States. The number of tons hauled a mile for every mile of railway open is in South Australia 130,928, in New South Wales 139,669, and in the United States 982,401. The average density of traffic is probably at least seven times as great in our own country as in the Commonwealth.

Freight rates in Australia are determined by different considerations than prevail in the United States. There are several important reasons for this. First, in Australia competition does not exist for the same haul as it does in America. There is less inland water competition. But acute competition exists, as will presently be shown,

for the freight of certain districts between the railway systems of different states. Second, railways are not built and administered primarily for earning revenue, but for public utility, and rates are in theory adjusted in accordance with a policy of general welfare. They are supposed to pay operating expenses for the particular haul in question, but on different commodities and between different points are adjusted to promote the settlement of public lands and to develop industries. In the third place, Australian rates are subject to modification on account of political or popular pressure to a greater extent than in America. There is a constant struggle between the state railway departments endeavoring to reduce deficits and merchants and producers endeavoring to reduce rates.

VI. INTERSTATE COMPETITION.

While competition for the same haul is impossible, because there are no parallel lines of importance in Australia and no private lines competing with those of the government, competition between different state systems has been troublesome. It is associated with river competition, and exists along the borders of Queensland, New South Wales, Victoria, and South Australia. This competition has caused the most serious rate problem that the railways of these four states have had to meet. Originally the interior pastoral districts of South-east Australia were served exclusively by river steamers and barges plying the Murray and Darling Rivers and their tributaries. This brought the traffic of those districts to South Australia. The object of the Victorian railways, after supplying the immediate need of the gold fields around Ballarat and Bendigo, was to reach these rivers, one and two hundred miles from Melbourne, and divert part of the

river-borne traffic to that city. Melbourne was thus enabled, about 1870, to secure a considerable proportion of the New South Wales wool clip, diverting it at that time almost solely from South Australia. After New South Wales had extended her railways to the interior, so that they tapped the same region as the river system, competition, which already existed between Victoria and South Australia, was increased by this new rival. The interests at stake were more than mere freight revenues. The business of supplying the pastoral districts with merchandise, commissions for handling their wool, and banking profits from wool and ranch loans were all involved, and were a basis for the bitter commercial rivalry between Melbourne and Sydney. Victoria had the advantage of possession and a shorter land haul from the river districts. From the Murray it is approximately twice as far to Sydney as to Melbourne.

Interstate competition first made itself felt as influencing rates about 1870, when Victorian railways began to pay a commission of 12 cents a bale to merchants bringing 10,000 bales or more of New South Wales wool over their line. In 1874 the railway commissioner of New South Wales noticed this competition in his report. He published figures to show that, tho New South Wales had more than twice as many sheep as Victoria, the Victorian railways carried more than two and one-half times as much wool as did those of New South Wales. The railway revenue from this commodity was over \$250,000 in Victoria and less than \$145,000 in New South Wales. He urged railway extension to secure this trade and give the lines the advantage of back-loading to the pastoral districts. Victoria had already made reductions in its rates for the purpose of attracting freight to its borders, away from the South Australian rivermen. The value of products crossing the Victorian border from New South

Wales had nearly doubled between 1872 and 1874, and was considerably over \$20,000,000 the latter year. The following year the commissioner noted the competition between South Australia and Victoria. The river traffic at this time employed 40 steamers and 50 barges over 3,500 miles of navigable water.

Since the New South Wales railways reached the border, this competition has been more keen. In order to attract New South Wales traffic, Victoria has had as many as six tariffs for the same commodity from the same station, based upon the origin of the goods. Merchandise to New South Wales and wool from New South Wales were carried at much lower rates for the same distance than were goods consigned to Victorian consumers or wool produced upon Victorian ranches. For instance, from Melbourne to Echuca, 144½ miles, sugar consigned to a Victorian consumer paid \$13 a ton freight. For the same haul, if consigned to a distant ranch in New South Wales, upon the Darling River, it paid but \$3.28 a ton freight. If for an intermediate destination, it paid all the way from \$5.48 to \$11.80. The cost of carrying Victorian wool from Echuca to Melbourne was \$6.20; and several shillings lower if from points beyond the state, according to the distance of the respective stations from the border. The percentage of discount on the regular Victorian rate from the border varied from 46 per cent. to 66 per cent. New South Wales especially resented having Victorian railways draw freight from the western districts, because Victoria had adopted a protective tariff that excluded New South Wales merchandise, and prevented Sydney merchants from competing for Victorian trade.

Similar conditions existed on the Queensland frontier. In this case New South Wales, with the advantage of a shorter haul, was able to take wool from the Queensland ranches. Consequently, the parliament of the latter colony

passed a "Railway Border Tax Act" in July, 1893, stating in the preamble that the state of Queensland had taxed itself to build railways and harbors and to subsidize steamship lines to carry its produce to other countries, and that these commodities had been diverted to another state by differential rates. An export tax of \$12.17 a ton was therefore levied upon all station produce crossing the border.

The hostility between the states caused by railway competition was a serious obstacle to federation and a delicate question in the federal convention. The proposal to have the Commonwealth take over the state railways having failed, partly because the assumption of state railway debts by the federal government presented many difficulties, the constitutional convention tried to devise some means of regulating interstate commerce. Members asserted that, as the first object of federation was to secure free trade between the states, the regulation of railway rates by the central authorities was essential. They claimed that there would be no advantage in a federation that simply transferred commercial contests between the states from the custom-house to the railway station. Most of the delegates were agreed that there should be an interstate commerce commission with judicial powers and some authority to regulate rates. Two parties arose in the convention over the question of the limits of this power. The New South Wales representatives took a states' rights attitude, and stood out for limiting the power of the commission under the constitution to regulating rates upon merchandise actually crossing the border. Against this position, Victoria and South Australia, with some support from other colonies, took the ground that a rate imposed by a state upon traffic entirely within its borders might become practically an interstate rate, if it were so adjusted as to divert traffic, that would naturally

pass across the border, away from a point within another state. In a word, the Victorian and South Australian delegates, actuated by motives of self-interest, advocated giving the federal government power to enforce an economic rate; that is, a rate that would allow traffic to flow through its "natural channels." So distrustful were the New South Wales delegates of this proposition that, when a motion was carried to give the federal parliament a free hand with the subject, they considered that this might render the adoption of the constitution by New South Wales impossible. The New South Wales delegates claimed that their railways were forced to apply what were practically discriminating rates to all commodities from the interior of the state in order to secure freight for their lines. Without this freight the lines would be non-paying, and thereby a great financial loss would be imposed upon their people. The matter was finally compromised by providing an interstate commission, under act of parliament, to regulate railway tariffs, but requiring the federal government to give due regard to the financial responsibility of the states with respect to their railways, and expressly allowing the states to make development rates for purposes of opening territory, provided these rates applied equally to traffic originating within and without the state. Up to within a year, the two propositions for establishing the interstate commission have been made in parliament, no action providing for one has been taken.

It has never been possible to settle interstate railway competition in accord with railway interests alone. In 1895 the railway commissioners of New South Wales, Victoria, and Queensland, came to an agreement. New South Wales was not to reduce her existing rates. Victoria and South Australia pooled their Darling River traffic upon a basis of two-fifths and three-fifths of their respec-

tive receipts after deducting 25 per cent. as a working charge. These two colonies established eleven base rates to points in New South Wales, with proportionate mileage rates to other stations. This enabled them to increase their previous charges, and they agreed to pay 40 per cent. of the increase to New South Wales. The three colonies agreed to abolish certain differential rates. This agreement was disallowed by the Victorian government at the instance of the Melbourne merchants. It might have increased the profits of the Victorian railways, but it would have adversely affected the business interests of the metropolis.

As the federal government had not settled competitive rates, a new voluntary agreement of the railway commissioners of New South Wales, Victoria, and South Australia, became effective on March 1, 1905. The provisions were in substance that the rates on traffic to or from competitive districts should be public, that no special rebates or concessions of any kind should be given to secure such traffic, and that all preferential rates which could be considered as inconsistent with the provisions of the federal constitution should be abolished.

This agreement indicates that federation has not ended interstate railway competition. It was stated in parliament that cheese shipped to Broken Hill from Adelaide, if it came from other states, paid \$22.39 a ton. If it was a product of South Australia, it paid \$8.15 a ton. Likewise the freight upon bacon from other states between Adelaide and Broken Hill was \$27.84 a ton; while that upon bacon made in South Australia was \$8.15 a ton. Even the agreement of 1905 has not prevented discrimination against freight originating in another state. In testimony before the tariff commission in 1906 a manufacturer stated that, in order to get harvesters from South Australia to a point in Victoria just over the border

from his own state, he was obliged to ship by sea to Melbourne and then via the Victorian railways almost as far as the direct railway distance from his factory to destination.

VII. RATE THEORY AND PRACTISE.

The federal convention afforded an opportunity for a public discussion of rate theories, and revealed much diversity of views as to what constituted a fair railway policy. The partisans of economic rates—those favoring the shortest haul—encountered opposition. One delegate said, "I do not allow for one moment that because it is a shorter distance from a certain point to Melbourne trade should go in all occasions to that city." Mr. Deakin, the present premier of the Commonwealth, who favored federal ownership of railways, contended that the government should require equal rates for equal mileage, except where the cost of operation was less on account of some such favorable condition as the vicinity of coal fields. He would make an exception in favor of tapering rates to develop remote districts. Some of the delegates maintained that no rate was preferential unless freight was carried at a loss. The convention was quite unable to distinguish to its satisfaction between differential and preferential rates. The difficulty was partly due to a theory of state railway management that does not exist under private ownership. This theory was stated by Mr. Reid, later federal premier, in the following words: "The state, owning an enormous quantity of land, has, as a representative of the whole community, a strong, even an imperative reason for railway construction, which has nothing to do with railways from the strict business point of view. . . . A railway that might, for a course of years, show a heavy loss, . . . might have con-

ferred untold advantages on the whole community in many directions. All these elements have to be taken into account by a state that runs railways, and which is at the same time responsible for the good government of its country and the development of its territory."

Tapering rates—a lower charge per mile for a long than for a short haul—were adopted many years ago. The early coal rates in New South Wales were four cents a ton a mile. In 1863 the commissioner allowed a discount of one mile in fifteen on all distances over fifteen miles. In 1876 the discounts for all freight were 10 per cent. per mile for hauls over 100 miles, 20 per cent. for hauls over 150 miles, and 40 per cent. for hauls over 200 miles. The earlier system of charging for wool by the bale-mile was changed about the same time to a station rate per bale.

In 1893 the railway commissioner of New South Wales mentions the following "development rates": grain in six ton lots (carloads), 300 miles for \$3.41, 400 miles for \$3.71, and 600 miles for \$3.95. Wool was carried from Nyngan to Sydney, 377 miles, for \$18.50 a ton. From Bourke and all points on the same line not more than 100 miles nearer Sydney there was a flat rate of \$19.53 a ton. These hauls ranged from 400 to 500 miles. Development rates are usually thus based on what are called in Australia station rates; that is, rates to specific points, which are lower than mile rates. Such a rate is not a basis for graduated rates between the station and tide water, but is a maximum rate. The flat rate for points 50 or 100 miles nearer the sea than the basing station may not be lower than the station rate.

Mile rates are based on the tapering principle. This is shown in the following table, which gives the present rates in three states for wheat and for the lowest-priced and highest-priced class of freight for hauls of 100 to 500

miles. The figures are the rate per ton-mile in decimals of a cent (United States currency).

		Per Mile for a Haul of				
		100 Miles.	200 Miles.	300 Miles.	400 Miles.	500 Miles.
Wheat	{ New South Wales .	1.95	1.33	1.00	.81	.68
	{ Victoria	2.03	1.54	1.14	.91	.74
	{ South Australia . .	2.12	1.56	1.38	1.29	1.26
Lowest Class Freight.	{ New South Wales .	2.83	2.43	2.15	1.87	1.68
	{ Victoria	3.63	2.93	2.51	2.30	2.16
	{ South Australia . .	2.79	2.16	1.94	1.84	1.78
Highest Class Freight.	{ New South Wales .	13.33	12.24	10.70	8.78	7.82
	{ Victoria	14.70	14.21	13.32	12.67	12.33
	{ South Australia . .	12.66	11.91	10.90	10.13	9.04

New South Wales development rates are subject to the suspicion that they are partly competitive. The Western Australian lines have no competition, nevertheless development rates are imposed. Mining machinery, native coal, and timber are carried at about cost.

The objection to development rates is that they increase freight charges for producers near the metropolis in order to benefit those at a distance. This was urged repeatedly in the federal convention. One speaker said that, while producers in the river districts gained by the low rates, the cost was paid by those who used railways in other portions of the colony. Another speaker said, "The governments give with one hand to some of the producers what they take away with the other from other producers."

In one of the New South Wales reports the commissioner observed that rates had been revised so that shippers living within a short distance of Sydney were no longer paying more for freight to or from that city than producers much further away. In 1902 a royal commission in Victoria reported that rates were so high in some places

that freight was hauled by wagons in competition with the railways, while in other places the rates were so low that freight did not pay the cost of carriage.

Changes in freight tariffs are about as frequent in Australia as elsewhere. Between 1858 and 1875, 20 rate sheets were published in New South Wales, or more than one a year. Revisions occur with less frequency now than at an earlier period, because economic conditions are not changing as rapidly. The last passenger and freight rates in my hands from New South Wales went into effect in 1904, those from South Australia in 1907.

Freight tariffs are changed not only to suit the convenience and varying necessities of the railways, but also in response to political or popular pressure. This is occasionally mentioned in official reports. In 1899 the Victorian commissioner stated, if he had yielded to the demand made upon him for additional train services and lower rates, the revenue would have been lessened £200,000 annually. In 1904 the railway commissioner of Western Australia, after noting certain reductions made during the preceding year, said: "If our rates (which are practically the same as in the eastern states) are to be lowered, owing to the persistency of merchants and others, the paying or non-paying of the railways becomes a responsibility of the state."

Little enlightenment is to be gained from studying the tariff books of Australian railways, unless all the conditions surrounding the traffic of each point are taken into consideration. There are usually six classes of freight, besides which wool, grain, minerals, and similar commodities are given special rates. The tariff for each class is based upon mileage or upon a flat rate to a district or station. The district rates are not necessarily to competitive points. For instance, there is such a rate on certain classes of freight to Ballarat from Melbourne,

somewhat lower than the mileage charge. Classifications and district rates may conceal discrimination in favor of local commodities. In South Australia American leather and cloth are rated in class 3, paying the highest mileage rate of any article; while ordinary leather and cloth are in class 1, paying about \$2.25 less a ton for a hundred miles.

Australian railways conduct their own express business under a parcel stamp system. The rates are based upon weight and distance. In New South Wales to carry 3 pounds 150 miles costs but 12 cents; to carry 112 pounds the same distance costs \$1.46; to carry 3 pounds 500 miles, 37 cents; and to carry 112 pounds the same distance, \$3.16. Victorian parcel rates are slightly less for short distances and more for long distances than those of New South Wales.

There has been a constant reduction of rates in all the colonies. In New South Wales the average receipts from representative commodities per ton a mile were as follows for the years indicated:—

Year.	Coal. (Cents.)	Grain and Flour. (Cents.)	Wool. (Cents.)	General Merchandise. (Cents.)
1879	2.54	2.58	5.60	5.38
1885	1.64	1.66	4.53	4.97
1893	1.46	1.28	5.03	5.23
1905	1.24	.87	3.63	3.45

These figures do not include terminal charges.

The average haul for these commodities is as follows: coal, 17.5 miles; grain and flour, 141.0 miles; wool, 271.3 miles; and general merchandise, 118.7 miles. The reduction in average receipts per ton has been even more marked than in case of the single commodities just mentioned, on account of the great increase of mineral traffic.

The difficulty of comparing the freight rates of Australia with those of any other country is illustrated by the wide diversity of rates in different states. In 1893 the rates for grain and flour for 100 miles were as follows in the four colonies mentioned: New South Wales, \$1.95; Victoria, \$2.20; South Australia, \$2.65; Queensland, \$3.34.

In 1893 the New South Wales railway commissioners, in a public reply to unfavorable comparisons between the colonial lines and those of the United States, contrasted the traffic conditions of the two countries, such as density of population, average haul, and average train load. They pointed out the fact that the short ton was used in American railway statistics and the long ton in those of Australia. They called attention to the lack of back-loading in Australia and to the relatively larger proportion of small consignments in their total freight. They stated, however, that the rates for grain and other agricultural produce for long distances "are as low as they are in America." This claim was probably true for many hauls of equal length in the two countries, tho it must be remembered that what is a long haul in Australia is a comparatively short one in the United States. In a comparison made two or three years ago I found that a local wheat rate from Fergus Falls, Minnesota, to St. Paul, 187 miles, was about double an Australian rate for the same distance. Likewise for hauls of equal length a number of rates upon coal, fruits, packing-house products, and other commodities, were higher in America than in some of the states of the Commonwealth. Yet the large amount of long haul competitive traffic in the United States necessitates, and our better-built trunk lines and greater train capacity render possible, such low rates for many commodities over such long distances, as compared with those of Australia, that the average charge per ton-mile is but a fraction of that in the Commonwealth. American railways re-

ceive upon an average .766 cent for carrying a ton of goods a mile, those of New South Wales 2.172 cents, and those of South Australia 2.77 cents. As the rates are still higher on some of the other Australian lines, the average freight charge in the country is probably four times that in the United States.

VIII. FINANCIAL OUTCOME.—PROFIT AND LOSS.

In America we are so apt to regard railways solely as commercial enterprises that questions of profit and loss appear more important to us than they do to Australians. The Australian attitude towards railway deficits is about the same as our own towards deficits in the postal service. Most railways in Australia failed to pay much more than operating expenses until the lines reached the interior marketing points. About 1880 those of South-eastern Australia attained a degree of development that returned the maximum profit to the state. The long lines to the interior had not yet been built, interstate competition was more moderate, and traffic was able to bear fairly high charges. In 1881 the railways of New South Wales paid 5.31 per cent. and those of Victoria 4.04 per cent. upon their capital. But during the decade ending with 1904 the only state regularly paying a net profit above operating expenses and interest charges was Western Australia. The light railroads of this colony had encountered few engineering difficulties, and received the benefit of the great expansion of population and industry due to the recent gold discoveries. During these ten years the only other states at any time paying a net profit were New South Wales, which did so twice, and South Australia once. While the South Australian lines seldom pay a profit, their deficits are very small, being less than one per cent. upon the capital every year of the ten, with a

single exception. Tasmanian railways are worked under peculiarly unfavorable natural conditions; and, tho rates are higher for the same service than on the mainland, the annual deficit varies from slightly over 1½ per cent. to nearly 3½ per cent. upon the capital invested. Queensland, during the decade mentioned, had a deficit varying from .88 per cent. to 2.44 per cent. upon its capital.

The aggregate deficits in some states amount to startling sums for young and sparsely settled colonies. During the 23 years ending with 1875 the aggregate interest on the railway debt of New South Wales was £4,536,073, while the net earnings for the same period were but £1,870,127. The deficit, therefore, was £2,665,943, or considerably over half a million dollars a year. The aggregate deficits in Victoria from 1890 to 1904, inclusive, were over four million pounds, or something like \$1,300,000 per annum. In 1904, on the other hand, Western Australia had a profit of about \$550,000 over all expenses, including interest upon its entire railway capital both from loans and revenue.

In 1904 the total railway debt of the Commonwealth was £131,930,000, about \$642,000,000, or 57.96 per cent. of the total public debt of the states (over sinking funds). The railways were paying in that year 3.08 per cent. on the cost of construction. They had paid something less the previous two years. The net deficit for the Commonwealth, after including interest charges, was as follows for the years stated: 1900, .59 per cent.; 1901, .65 per cent.; 1902, .86 per cent.; 1903, in the midst of the drouth, 1.22 per cent.; and in 1904, .67 per cent. The average annual deficit during these five rather unfavorable years was therefore about \$5,136,000.

Two causes account largely for these deficits. Rates on all lines are kept down by popular demand and in order to make the railways subservient to development. For

the same reasons non-paying lines and branches are constructed. Non-paying railways have been built in the United States, and in some cases abandoned. But in a country where railways are owned by private companies the capital of a bankrupt or abandoned line disappears from commercial accounts, and the loss is pocketed by the investors. Under government ownership, interest upon this unprofitable investment continues a permanent charge against the existing railway system. In 1903 there were twenty-five non-paying lines in New South Wales, representing an investment of over \$65,000,000. Unprofitable lines in Victoria are operated at an annual loss of nearly a million and a half of dollars (£294,697).

The recent prosperity of Australia has changed most of these deficits to profits. Within the last few years the railways of Victoria have met their interest charges, and in 1907 the South Australian railways had a surplus of over \$1,000,000. The Queensland railways, also, are now reported to be self-supporting. These better financial results are due to favorable seasons and the high prices for wool and meat which Australia at present enjoys; but there is reason to believe that the period of serious deficits is well-nigh over. Unprofitable lines are less likely to be built than formerly, as the bad economy of this policy is now well understood. The rates of interest upon public loans become lower as the early railway debt is paid or refunded. Victoria paid 6 per cent. for most of the money borrowed for railway construction prior to 1870. South Australia paid 6 per cent. upon all its loans during this period, and has not paid over 4 per cent. for money borrowed since. The last reported loans have been made for as low as 3 per cent. and $3\frac{1}{2}$ per cent. Were the entire debt refunded on this basis, the South Australian railways would seldom have a deficit, as their average earnings are rather over $3\frac{1}{2}$ per cent. upon their investment.

IX. CONCLUSION.

Statistical comparisons of the adequacy, economy, and efficiency of Australian and American railways are to be distrusted. Even in the rare instances where we may feel assured that figures mean the same thing in both countries, we are met by the fact that they must be qualified by a multitude of considerations relating to the different purpose of the railways under government and private ownership and the different physical conditions under which they operate. Merely descriptive comparison is fairer, though superficially it may appear less accurate. Considering the small population of Australia and its distribution over so vast a country, the railways are probably as extensive as could well be expected, altho the total mileage is so far behind that of our own country. The service maintained is not perfect, but is fairly satisfactory. The passenger service impressed me as considerably better than in some of our western and southern states where physical and industrial conditions were not dissimilar from those of the Commonwealth. Shippers in Australia often criticise details of traffic management, but a general criticism of the railway administration is rare. There is so little opposition to government ownership that a person who seriously proposed returning to private control of railways would be considered decidedly eccentric.

Nevertheless, it does not follow that because government ownership has been successful in Australia it could be applied as easily in the United States. Public ownership was a necessity to which Australia was forced to accommodate itself, not a goal toward which it was ardently striving. Before methods of public administration were perfected to the extent that they are to-day, great evils in railway management arose, and the present

comparative efficiency of the government lines results from experience gained through a multitude of failures.

The essential process of railway administration is the same under an independent government commissioner or board of commissioners in Australia as under a general manager and board of directors chosen by the stock-holders in America. There is no reason why one system should not be as efficient as the other. The railway commissioner has the same authority as the president, directors, and managers of an American railway. He uses independent judgment to the same extent in details of management. In both countries, success or failure depends upon the man in control. In Australia the position of a railway commissioner is secure and well paid. There is no difficulty in obtaining competent men. The salary of the commissioner or chief commissioner is \$15,000 or \$20,000 a year in the larger states; and, tho he is appointed for a fixed term, his reappointment is practically certain so long as the roads are well managed.

For many years there has been no charge of railway favoritism to individual shippers. The evil of secret rebates, except possibly where states compete against each other, is practically unknown. Railways have not fostered trusts. But these results are due to the fact that the railways of each state are a monopoly, not to government ownership.

Railway employees constitute a large fraction of the voting population, and possibly have used their political power at times to favor their own against the public interest. But under the present organization, which renders the commissioner independent of politics, their political influence does not affect the management. Recently, in Victoria, all public employees, including railway servants, have been represented in parliament by separate members, in order to prevent their holding the balance of

power in so many election districts as practically to control the legislature. In the two railway strikes of importance that have occurred since 1900 the public has vigorously supported the government against the strikers. Public interest in efficient railway service is too keen to allow employees to usurp improperly functions of administration.

While the wages of railway employees are higher in some parts of the United States than in Australia, the general condition of workers is undoubtedly better in the latter country. Their tenure of service is more secure, they work shorter hours, usually eight or nine per day, and in two states, Victoria and New South Wales, they retire upon a pension. These conditions have not prevented serious strikes in Victoria and Western Australia, and in the former state there has been very drastic legislation to suppress these disturbances.

It has been asserted that the rate policy of government railways in Australia has been dictated by the commercial interests of the great cities, and caused the population to become concentrated in a few large centres. The latter assertion makes an effect of a cause. When the first railways were built in Australia, one-third of the population of Victoria already resided in Melbourne, and one-fourth that of New South Wales in Sydney. But the existence of these large cities, though due to other causes, has influenced the rate policy of the government. Urban rivalries are behind the keen interstate competition. At interior towns, such as Ballarat, Bendigo, or Bathurst, one hears the complaint that local manufactures are crippled and country trade hampered because they cannot obtain the same rate privileges as the metropolis.

Complaints of car shortage and delays in transporting freight are less common than in America, but this is because the Australian railways have only about one-seventh

as much work to do per mile of line as those of the United States. For the traffic they handle the railways of the Commonwealth are in a sense more adequate than our own; but this results from the physical peculiarities of the country, which require a large mileage in proportion to business on account of the nature of the industries to which the service is limited and the absence of through freight. To complete the circle of reasoning, private enterprise would hardly have provided railways at all under these disadvantages.

The evils predicted of government ownership in the United States are not now apparent in Australia. Each country has probably followed the policy best adapted to its circumstances. To change that policy in response to a theory would be unwise. If industrial conditions change in America in such a way as to demand government ownership, it will doubtless come. But in the United States of the past private railway control was inevitable because it responded to our peculiar needs; while in Australia, for the same general reason, government ownership was an economic necessity.

VICTOR S. CLARK.

THE PRICE POLICY OF THE UNITED STATES STEEL CORPORATION.

A UNIQUE industrial experiment is now in progress. The United States Steel Corporation has thrown down the gauntlet to the consumer. No matter how general and extreme may be the fall in prices and the stagnation in industry, the price of steel, if the power of the trust suffices, is to remain unchanged. Copper and wheat may fall, cotton and wool may decline to the lowest prices in ten years, all other commodities may drop to low levels, but the price of steel will not change. Strong in its control of the ore supply, especially confident in its business alliances, whose ramifications reach into the innermost councils of its largest customers, and relying also on the general spirit of co-operation among business men, which has developed contemporaneously with the trust movement, the United States Steel Corporation has set its face like a flint against any readjustment of prices to the changed conditions of demand.

The American people are deeply interested in the result of this experiment, for upon the revival of construction activity, upon the erection of office buildings and factories, the construction and extension of railroads, the repair and enlargement of the productive plant of society, depends the early revival of business. At present constructive activity is suspended, locomotive and car works are silent, railway building has ceased, no new mills are being erected. The demand for machinery and materials is less than half the volume of last year. These conditions, universal throughout the industrial sections of the United States, mean that one million men, whose average earning power is five hundred dollars per year,

are out of work, that the income which is spent in the retail stores has been heavily reduced, and that the industrial collapse is being felt to the very finger-tips of the industrial organism.

Demand for construction purposes is a demand for materials,—for brick, lime, cement, lumber, glass, copper, and zinc,—but pre-eminently a demand for steel. Last year twenty-three million tons of steel were absorbed by American industries. This year the consumption of steel will not exceed fifteen million tons. So much has the national development been retarded. Not until the demand for steel revives, moreover, will prosperity return. The revival of business may be connected with the revival in steel by the relations of either effect or cause, but, whatever the sequence of relation, the connection between the steel trade and prosperity is well known. When blast furnaces and converters begin to flame, general employment, large earnings, high dividends,—in a word, good times,—will return. Until the steel industry revives, depression will continue.

The Steel Trust has been severely criticised for its refusal to reduce prices. Its supreme power in the trade is untempered, it is claimed, by proper sense of responsibility for the public welfare. Instead of reducing prices to correspond with the declining condition of its customers, thus reducing their costs of construction and repair, and keeping its mills open and its workmen employed, thus adjusting its business to the conditions of depression, the officials of this brutal and grasping monopoly arrogantly announce that they see no reason for reducing prices, and that prices will be maintained. Moreover, altho the trust has many competitors in every line which it manufactures, its position as the dominant interest, controlling nearly two-thirds of the country's production of steel, enables it to persuade and influence

so-called independent producers to follow its lead, so that up to the first of April all the importunities and blandishments of consumers have been ineffective to secure any substantial concessions, either from the trust or from its nominal rivals. Meanwhile the export company of the trust is making active preparations to increase sales to foreigners at low prices which are refused to American consumers and which may enable the foreign manufacturers to underbid their American competitors.

This indictment of the United States Steel Corporation is framed in bitter words. It represents an almost universal sentiment, and the Steel Corporation must make a good defense. Unless the Corporation can disprove the accusation that it has used its power to oppress the consumer, and unless, also, the unfolding of events corroborates its claims, its position before the bar of public opinion will be most unfortunate. While there is no likelihood that the trust will be dissolved, the tariff question is not yet settled, and, unless it is settled in favor of existing duties on steel, the stockholders of the Steel Corporation may suffer.

This policy of upholding prices must be justified, not only from the standpoint of the Corporation's interest, but from that of the public interest as well. A business whose sales amount to \$760,000,000 in a single year is a public concern. Its officials cannot deny their responsibility to the public as well as to their stockholders. They will not be allowed to oppose permanently the advantage of their Corporation to the welfare of the community.

The United States Steel Corporation answers its critics substantially as follows: "For seven years we have maintained stable prices in those branches of the steel industry which we are able to influence. During this period there have been repeated occasions in 1902, in 1905 and 1906-07,

when, without exciting any comment, we could have exacted much higher prices than those which we actually charged. To be specific, rails sold in 1899 at \$35 per ton, when there was no trust: we have maintained for seven years a fixed price of \$28 per ton. Wire nails went to \$70 per ton in 1899: we have maintained them between \$40 and \$38 per ton. Again, the price of pig iron, the basic product of the industry, we do not control, and the price of pig iron for immediate delivery has several times during the last five years equalled the price of steel rails. There have been times within the last two years when we could have added 20 per cent. to the price of every one of our products without causing a ripple of excitement. In the face of such conditions of demand our prices remained substantially unchanged. We fixed them at figures which we believed to be fairly remunerative, and which did not unduly burden the consumer, and at these figures, with trifling variations, they remained. We have had no secret prices, no special concessions, no rebates to favored buyers. Our policy has been one of equal rights to all, special privileges to none. This policy has powerfully contributed to the maintenance of business stability. All classes of our customers, from the railroad to the retail hardware dealer, have known what their steel would cost them months in advance of their purchases. They have therefore been able to base their calculations of the future, so far as our policy entered into these calculations, upon certainties. There have been no surprises in the price of steel. In the few cases where price changes have been necessary, our customers have had ample notice. We believe that we have treated the public fairly in the past, and that we are justified in disregarding the present depression, which is unlikely to be of long duration, by continuing a price policy which, while yielding us fair

profits, in the long run has proven very beneficial to our customers and to the public."

The claims of the Steel Trust as to its moderation in the past are corroborated by the visible evidence of price movements in the trade. The statements of the trust are borne out by the record of prices. Before it took command of the steel industry, there were alternations of boom and depression; there were no fixed prices of steel; rebates and discriminations, quite as serious as any ever practised by the railroads, were the regular order; the buyer cancelled his contracts when the market turned against him, and tied up the mills with long engagements, often at unprofitably low prices, when the market began to improve. In place of a régime of anarchy the Steel Corporation has introduced the reign of law. To a condition where everything was uncertain, irregular, unstable, has succeeded a period of calm and order, in which the only disturbing influences are in the lines in which the Steel Trust is not yet dominant. The course of iron and steel prices for the past fifteen years supplies an impressive argument in favor of the benevolent industrial despotism which the United States Steel Corporation has established.

The argument of the trust in favor of maintaining prices rests upon facts easy to be verified by any one. Its statements, so far as these relate to the past seven years, we have seen, are true, and its conclusions are plausible. It is true that the preservation of stable prices in spite of the temptation to advance them, as, for example, in 1906 and 1907, has been a profitable policy for the trust. By holding prices on an even keel, it has developed the maximum demand, and has encouraged large orders and prompt specifications against those orders. A runaway market in steel has always, moreover, been followed by a decline caused by the unwillingness of large con-

sumers to pay exorbitant prices. That this policy of stable prices has been profitable does not, however, disprove that it has been highly beneficial to the entire business community.

The argument of the trust, then, can only be refuted by showing that the benefits to the public from a general reduction of the price of steel to correspond with the fall in the prices of other materials will considerably overbalance the damage which the Steel Corporation, and through it the public, would suffer in the derangement of industrial conditions.

Any consideration of the price policy of the Steel Trust must take account of the peculiar industrial structure of this Corporation, which sets it, in a sense, apart from other enterprises, and forces it into policies peculiarly its own. Because of the ownership of its sources of raw material supply, buying only a small portion of the materials used, it manufactures steel at a fixed cost, the labor element being the only variable, and fluctuations in labor cost not being an important factor. The profits of the Corporation, therefore, since its costs are relatively stationary, are far more sensitive to price changes than those of producers who buy their coke and ore or iron. The latter find partial compensation for the decline in the selling prices of their products in the reduction of their costs of materials. The Steel Corporation, however, properly speaking, has no cost of materials. It produces its own materials, and its profits per ton of output must therefore follow its selling prices.

This peculiarity of the trust's constitution has an important bearing upon its policy in the present crisis. Half the producing capacity of the Corporation is at this time in operation, and net earnings are at the rate of \$6,000,000 per month. They will, if conditions do not change for the worse, exceed \$80,000,000 for the year.

The amount of water in steel securities has been variously estimated. It is not unfair to place it at the amount of the common stock, \$508,000,000. The Corporation was, however, organized with abnormally heavy fixed charges (to which the absurd bond conversion scheme of 1902 materially added), and it has, in addition, the embarrassing obligation of paying all dividends on its preferred stock, if not this year, then two years in one, before the common stockholders can receive any return. It is perhaps unfair to say that the Corporation is paying interest and dividends on water; this could be said, with any confidence, only as to the 2 per cent. on its common stock. Nevertheless, it is unfortunate, from the standpoint of its position in the present crisis, that its capital carries so large an amount of fixed payments into the income account. On the basis of the 1907 report the annual fixed payments of the Corporation, including interest, sinking fund appropriations, taxes and depreciation and replacements,—all payments which the company must make in order to meet its obligations and maintain its properties,—amount to \$56,700,000. The 7 per cent. dividend on the preferred stock calls for \$25,300,000 additional. The Corporation does not expect to pass its preferred dividend. Even tho the amount spent in maintaining its plants should be temporarily reduced, the preferred stockholder will, if possible, be provided for. The passing or even the postponement of this dividend would immediately raise a general doubt of the solvency of the trust, and such an action must, if at all possible, be prevented. The United States Steel Corporation is now earning almost enough, even on its present reduced scale of production, to pay fixed charges and preferred dividends, and the dividend on the common stock is so small, calling for only \$10,000,000 a year, that the Corporation, which has a surplus of over \$100,000,000, will not be severely censured,

should it decide, at least for the time being, to maintain this 2 per cent. dividend.

Prospects, moreover, are improving. The worst of the depression has been passed. Times may be dull for a year, but well-informed observers believe that business will grow no worse. A 50 per cent. employment of its mills is, therefore, the most serious situation with which the trust is likely to be confronted, and there is a fair prospect that the foreign sales, which were 10 per cent. of the total volume of business in 1907, will be materially increased. Even if lower prices are charged the foreign consumer, which seems probable, these sales will furnish a larger number of tons over which the fixed expenses of the company will be distributed, and will therefore increase its profits, even if made at the bare cost of production.

The preservation of this state of affairs, so desirable from the standpoint of the investor and the Corporation, depends upon, first, the maintenance of the present scale of prices under which the Steel Corporation earns \$16 per ton profit, or, if a policy of reducing prices is chosen, upon an increase of sales sufficient to offset the reduction of prices. For, be it repeated, the cost of production of the Steel Trust is a fixed cost. The Corporation produces practically everything which it consumes. In such times as these it buys practically nothing. While the independent steel maker is buying pig iron six dollars per ton cheaper than a year ago, the United States Steel Corporation, which during a dull market is able to produce all its own iron, has the same cost of steel production as last year,—probably, indeed, a higher cost, because of the reduced output of many of its mills. A 20 per cent. decline in the average price of its products, which to the independent producer would be largely offset by his reduced cost of materials, would mean to the Steel

Corporation that, if its tonnage did not show a material increase in response to lower prices, its profits, instead of averaging \$80,000,000 per year, would fall to \$50,000,000, hardly sufficient for fixed charges and depreciation, leaving nothing for preferred dividends, and immediately conjuring up in the minds of investors the spectre of bankruptcy. A 20 per cent. decline in steel is a smaller reduction than has been repeatedly experienced in the past. A less reduction than 20 per cent., in case the Corporation should decide upon a change in its policy, would not meet the expectations and demands of consumers, and yet, failing a corresponding increase in demand, 20 per cent. off present quotations of steel would reduce the net earnings of the United States Steel Corporation perilously close to Mr. Micawber's dividing line between happiness and misery.

No intelligent man desires that the United States Steel Corporation, our most typical and our most important industrial institution, should be placed in a position where either its solvency or the maintenance of its preferred dividends would be endangered. Even a well-defined rumor of either event would produce consequences entirely impossible to contemplate with satisfaction. Public opinion may revolt at the eventual payment of large dividends on Steel Common, and the people will not be entirely satisfied on this point, even tho the trust replaces the water of combination out of the profits of monopoly prices. But that, as we have seen, is a question for the future, and we are now dealing with a present emergency. The weighty criticisms of the Corporation's policy of maintaining prices are based upon the assumption that reduced prices would mean larger consumption of steel and greater employment of labor. If, however, it can be shown that the effect of reducing prices would not be to stimulate the consumption of steel, but, on the

contrary, would retard the return of prosperity by encouraging buyers to hold off in the hope of further cuts and concessions, the justification of the Steel Corporation's determination to hold prices firm in the face of depression and reduced demand, in the minds of thinking people at least, will be complete. If the public welfare will not be advanced by a cut in steel, and if the Steel Trust will be injured, certainly the price of steel should be maintained. On the other hand, if the Steel Trust could increase its sales by reducing prices sufficiently to offset the reduction, and if its only reason for maintaining prices is the difficulty of getting them back to their present figures against the protests of the consumer after a cut has been made, (we may be certain that this consideration has not been lost sight of by the officials), then the Steel Corporation is acting in defiance of public welfare, and, if it continues in this course, will sooner or later be called to account.

To answer the question which has been raised, we turn to the current trade reports which chronicle the condition of the iron and steel trades in the various cities. From the weekly market reports from Chicago, Cleveland, Cincinnati, Pittsburg, Philadelphia, and New York, we learn the following:—

1. That demand in every department of the steel trade is far below its normal volume, averaging about 50 per cent. of last year's requirements;
2. That this condition is quite as pronounced in those lines where prices have been reduced as in the products which the Steel Corporation controls; and
3. That the only effect of the price reductions which have been made in all departments of the iron trade has been that the reduced volume of business has been given to the mills making the concessions, and that up to April 1, when the depression has already lasted five months, price cutting has been powerless to stimulate demand.

These conclusions are worth a little study and illustration. In the pig iron trade, where the Steel Corporation is prominent but not commanding, efforts to maintain prices have been fruitless. Assisted by the competition of Southern iron, prices have fallen \$7 to \$8 per ton. If there was anything in the argument that a reduction in prices would stimulate demand, it would appear in the iron trade. And yet we find here stagnation even more complete than in the steel business, accentuated, it seems, by the prevailing uncertainty as to the future course of prices. There is a great deal of competition among the mills for the small business offered, and the orders go, naturally, where the prices are lowest. Consumers of iron, in other words, are getting the benefit of a competitive struggle for business, but no more business is being done proportionately than in the various lines of steel production. How powerless price productions in iron are to stimulate business appears from the experience of the last few months, during which there has been a marked curtailment in iron production—this includes the iron used for steel making purposes—in the face of a heavy decline in price.

This is no unusual condition. It has characterized every period of business depression. In 1900, for example, the price of Bessemer pig iron on January 1 was \$25 per ton at Pittsburg. Business was dull, and but little iron was sold. Some shading of prices resulted, with but little effect on the demand. By the middle of May the Iron Age stated that "it was impossible to sell iron at any price," and in spite of reductions by agreement, from \$20 to \$16 in July, little business was done. These prices were reduced to \$13 in October, where they remained during the rest of the year, but demand was small and few sales were made. The same phenomena, prior to the formation of the Steel Corporation in 1901,

characterized the steel markets during periods of depression. There was fierce competition and heavy price cutting, which did not, however, stimulate demand, but merely divided a limited amount of business among rival bidders, while at the same time increasing the uncertainty and hesitation of the buyer, who at such times is prone to hold off in the hope of further concessions. It is recognized as an invariable characteristic of the metal markets during such periods that demand is half dead, and that price cutting, no matter how drastic, is powerless for its resuscitation. If further confirmation of this proposition is needed, it is furnished by the steel markets at the present time. Prices are everywhere being firmly held by the Steel Trust, and yet the demand for steel, if the market reports indicate anything of the situation, is somewhat stronger than where the influence of the trust is not potent to restrain competitors from costly and useless reductions.

These facts show that the necessity of adjusting prices to changed conditions of demand, which is generally believed in as one of the economic axioms needing no demonstration, does not exist in the field of materials and machinery. Iron and steel products, aside from the limited amount needed for household purposes, are bought to make money from their use. Steel rails, structural shapes, plates, wire, merchant bars, are purchased by people who wish to turn these materials into some form of industrial plant,—railroads, office buildings, cars and locomotives, ships, machinery of all kinds, appliances which in their turn are bought from the same motive of a desire for profit. In this respect, iron and steel differ radically in the conditions of their production and demand from flour and meat, and oil and sugar, which are bought because they minister directly to human wants. The purchase of iron and steel is primarily a question of the

condition of trade rather than the price of the articles purchased. If railway earnings are increasing and railway securities are selling readily at high prices, the railway demand for iron and steel, which has been estimated at from 40 to 50 per cent. of the total demand for these products, is strong and increasing. Prices of rails and shapes may be high, but, unless there is some reason to believe that they will decline in the near future, the railways and the locomotive and car builders place large orders. Price is a secondary consideration. What is wanted is immediate delivery, to furnish the rails and equipment for a rapidly growing and profitable traffic. Very often high premiums will be paid for immediate delivery.

On the other hand, when railway earnings are declining, as they are at present, when new issues of stocks and bonds are practically unsalable, when 300,000 freight cars stand idle, and with no prospect of an immediate resumption of activity, railroads and all industrial enterprises confine their purchases to their current needs. They are holding back from new work, not only because the profits on such investments are not in sight, but because they cannot get the money.

Of what purpose, then, would be the reduction of the price of steel to these consumers of steel? Such a policy would not produce a large amount of new business. It would merely reduce profits on the business which the Steel Corporation now receives, and would be almost certain to result in serious disturbances in the Corporation's finances and in the general financial situation. If steel prices had been reduced on January 1 to correspond with the reduction in the prices of many other materials, but little more steel would have been sold, the profits of the Steel Corporation would have fallen to the vanishing point, and the railroads, builders, and manufacturers would have saved some money on their small business.

As it was in 1894, 1896, 1900, and 1903, so it has been in 1908. In every line of metal and material production where competition is not regulated and controlled, orders decrease, producers struggle savagely for a share in dwindling business, profits disappear, bankruptcies multiply. The buyer, in so far as he is not also a seller, and therefore subject to the same demoralizing and disheartening influence of competition, profits at the expense of the struggling rivals for his favor, but the effect of the competitive struggle in increasing the volume of business is insignificant. It may be objected that, if the Steel Corporation is increasing its export business by cutting prices, it could do the same thing in America. To this the answer is that these foreign sales represent business taken from foreign competitors of the trust. It is hardly advisable that the Steel Corporation should drive itself and its domestic rivals into bankruptcy by introducing this policy into its domestic sales. Neither would the general consumer profit from a temporary reduction in steel prices. Such a decline is not felt by the general consumer, who would never be able to find in his domestic budget any trace of a temporary reduction in the price of steel rails, or any lessening of the fees of the physicians, lawyers, or engineers whom he employs, because the cost of office buildings and the scale of office rents had been for the time being reduced by cut in the price of structural steel.

It is also to be stated, and that most emphatically, that if the experience of the competitive régime is worth anything as a guide to our judgment, not only would the public at large fail to profit by the reduction of steel prices, but the return of prosperity would be seriously delayed by an abandonment of its settled policy on the part of the Steel Corporation. Such a change would introduce uncertainty and hesitation into the plans and calculations of every purchaser of steel. What is needed for the return

of good times is the restoration of confidence, a general conviction that industrial and financial conditions are becoming settled, so that business men can plan for the future in the belief that their calculations of profit will be confirmed by the event. To the restoration of confidence, because it makes for settled and permanent industrial conditions, the price policy of the Steel Trust is a powerful aid. Any departure from that policy would be a strong deterrent to the undertaking of new schemes of construction, upon which, as we have seen, the revival of business directly depends. Many new projects are lying dormant, awaiting the return of confidence. As soon as financial conditions improve to such a point that securities can be sold, these enterprises will be launched. It is of great importance to their early flotation that no elements of uncertainty and hesitation should be introduced into the calculations of their promoters by a break in steel prices.

That the United States Steel Corporation was excessively capitalized cannot be denied. That its average profit of \$16 per ton is grossly excessive will not be questioned, least of all by those who pay the prices which make these profits possible. That the community would be benefited if steel prices could be permanently fixed on a lower level is not, in my opinion, open to question. All this, however, is beside the point that for the Steel Corporation, having once established a level of prices, to depart from this policy for no better reason than because a financial panic has temporarily suspended the industrial animation of the United States would be a foolish, because a gratuitous, contribution to its customers at the expense of its stockholders.

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NOTES AND MEMORANDA.

THE CONTROVERSY ABOUT THE CAPITAL CONCEPT.

A theoretic problem which is especially engaging the present attention of economists is the exact and proper conception of capital as an economic term. The prevailing views on the subject are too well known to the readers of the Quarterly to require recapitulation here. I desire only to ask the careful attention of economists to a novel conception of capital, advanced by me in a recent publication,¹ which I believe to have some claim to be authoritative because of the manner in which it was reached.

It seems to me that the trouble with all the prevailing concepts of capital is that they have been sought by the inductive or empirical method. Each definiter has endeavored to detect the bond which will synthesize the results of his individual observations. A certain evolution of concept—usually, to be sure, both tedious and uncertain—can be obtained by this method; but it rarely results in anything so definite and unequivocal as to command universal assent even from the competent. If we approach the problem by means of the deductive or analytic method, we recognize at once that capital is a means of production employed by the enterpriser. This is the genus of which it is a sub-class. What are the essentials for production? They can be divided into four distinct groups, and there are, therefore, four, and only four, distinct functions to be performed, and four factors, each performing one of these functions, and one only. An individual can indeed exercise several or all of these functions, and, as a matter of fact, must exercise at least two of them conjointly. The inductive process is practically forced to define the function in terms of the factor, because observation must always be

¹ *Enterprise and the Productive Process.* G. P. Putnam's Sons. 1907.

confined to the actions of individuals, not one of whom can confine himself to the exclusive performance of a single function. Factors can be directly observed, functions can only be inferred from observations of factors, where our only reliance is on the inductive method. The deductive process as naturally defines each factor in terms of its peculiar function because it distinguishes the factors solely by means of such radical differences in function as must necessarily segregate general actions into definite groups.¹

To obtain a material product, the first requisite is a purposeful or intelligent rearrangement of matter. This is effected by muscular force more or less intelligently directed. Secondly, we must preserve these rearrangements until such time as they are fitted for enjoyment,—*i.e.*, while they are "raw material,"—and after that until such time as they can afford either directly or indirectly a maximum enjoyment. Thirdly, we must avail ourselves of such facilities of production as we can appropriate from nature, invent, or create by rearrangements not directly useful. Fourthly, we must subject ourselves to the consequences of production. The first three furnish the means of production and enjoy respectively incomes of wages, interest, and rentals; all predetermined in amount because the furnishing of the means of production necessarily precedes production. Lastly, we have the enterpriser, who "as such" does not furnish a means of production, but subjects himself to its consequences and obtains an income of profit and loss (necessarily unpredetermined, because a consequence cannot precede the action). On the average, the result is a net profit, due to the fact that he refuses to so subject himself unless the probability of gain is substantially greater than the probability of loss.

Before deducing the true concept of capital from the above analysis of the productive process, it is essential that something more should be said here of the theory of Enterprise, as it is not yet fully adopted by the economic guild.

I first promulgated this theory in a criticism in these

¹ See the chapters on Method in Enterprise and the Productive Process.

pages¹ of Professor Böhm-Bawerk's work on Capital and Interest, the purport of my criticism being that the income he treated as interest was really a composite income, part interest and part profit. He brushed me to one side rather brusquely on the ground that I was evidently not familiar with his conception of profit. As a matter of fact, I was familiar with it, but disagreed with him, and still disagree. He evidently did not give my conception of Enterprise any serious consideration; and for this he is hardly to be blamed, as my first presentation of the idea was somewhat crude. Notwithstanding its crudeness, Professor Clark, on the other hand, was keen enough to see, and to state frankly, that I had pointed out a new and distinct form of income, and to that extent had made a valid contribution to economics. He refused, however, to consider the reward of risk or responsibility as a fundamental form of income, contending that it was only supplementary to interest because the capitalist was the only one who had anything to risk. I pointed out in rejoinder that it was necessarily the owner of the product upon whom the loss fell, and that, according to Professor Clark himself, the "ownership of the product" was necessarily the enterpriser's and not the capitalist's, and that the individual who made a loan always charged a premium over pure interest as an insurance. I further showed, I think conclusively, that an insurer was an enterpriser, and that, therefore, the lender of money at a rate in excess of pure interest exercised the dual functions of capitalist and enterpriser, and that it was in the latter capacity that he suffered any loss that occurred or enjoyed as a profit any gain over pure interest that accrued to him as an individual. Other economists have evidently adopted my view of this particular instance, as most recent works treat the assumption of risks as a function of the entrepreneur, and some of them, notably Professor Fetter, have adopted the term "enterpriser," which I proposed as a substitute for entrepreneur because it carried with it the connotation of risk. Hardly anybody, on the other hand,

¹ Vol. vi., p. 290.

I regret to say, seems willing to regard the assumption of responsibility, the subjection to the results of production, as *the only* fundamental function of the enterpriser "as such." The conception of profit now prevalent seems to be that profit is the joint reward of management and responsibility, with the emphasis on management. Passing over for the moment the fact that a factor defined in terms of its function cannot have two fundamental functions, this seems to me very illogical. The plowman is the man who plows. His success as a plowman depends upon his skill in keeping his furrow straight, his selection of a plow fitted to the character of the soil, of horses of a strength and temper suitable for the work, and upon other causes too numerous to mention. But the logicians who insisted that "skill" or "judgment" was the fundamental peculiarity which distinguished the plowman from other men would be laughed at rather than argued with. Yet any one who will read the passage in Fetter's *Principles of Economics* (p. 291) will find this to be exactly the ground on which he rejects the theory that profit is the reward of the assumption of responsibility. He says, "Profits are due not to risks, but to *superior skill* in taking risks." In several other places in his book he speaks of profit as a "kind of wages," thus recognizing that the exercise of judgment is an act of mental labor. The term "enterpriser," which I first suggested and which Fetter adopts, means the one who makes himself responsible for an undertaking or venture. It is a synonym for the old-fashioned term "adventurer," but surely no one would define the adventurer as the man who was skilful in venturing. The rash and unsuccessful adventurer is as truly an adventurer as the more careful and skilful, or perhaps only more fortunate, one who succeeds. It is the one fundamental fact that he ventures that makes a man an enterpriser. It is what a man does, and not how well he does it, that defines the function he exercises. It is plowing, and not how well he plows, that makes a man a plowman. No one ever presumed to claim that "efficiency" or "judgment" is the fundamental char-

acteristic of the laborer which differentiates him from other men. Why, then, should it be insisted that they are the fundamental characteristics of the assumer of responsibility? Surely, wages are due to skill in exactly the same sense that profit and loss are.¹

This recapitulation of the theory of enterprise is necessary here for two reasons. One is that, if my views are correct, economists confuse profit sometimes with rent, sometimes with interest, and even sometimes with wages: the other is that the function of the capitalist and the origin of interest are determinable only from the view-point of enterprise. It is only when we have elucidated what need of the enterpriser the capitalist supplies that we can discover just what he effects in production. The function of the capitalist is passive, not active. It is not what he does, but what he refuses to do, that obtains him an income of interest. He simply refrains from exercising a certain amount of the purchasing power which has come into his possession as wages, interest, rent, or profit. In the typical case this power comes only in the shape of money; that is, only as a claim on commodities in general. When it happens to become embodied in commodities, he necessarily acts not only as a capitalist, but, so long as he retains the commodities, as an enterpriser as well, because he is then subjected to the uncertainties of actual possession. If he lends these actual commodities to be repaid in money, he escapes the involved uncertainties, but preserves his claim, not on the commodities parted with, but on commodities in general. His usual and typical course, however, is to sell the commodities and then lend his general claim. The crucial point is that the capitalist "as such" cannot invest his own capital. Investment is strictly incident to enterprise. It is the very act of subjecting capital to the uncertainties inherent in actual ownership

¹It will of course be understood that in selecting Fetter's treatment of profit and enterprise for criticism I am using him merely as the representative of the prevailing mode of thought on the subject. As a matter of fact, I find myself in closer accord with his views on economics than with those expressed in any other general treatises on the subject with which I am familiar.

of "capital goods." The active part of preserving capital is incidental to enterprise. Retaining the "capital goods" in which capital is embodied, whether such "capital goods" are computed by quantity or value, is rewarded not by interest, but by rent or profit accordingly as the "capital good" is a facility or a consumable commodity; accordingly, that is, as it is withheld from the market for use or retained for the purpose of being ultimately sold,—held for a market. The passive part of preserving capital is simply allowing it to persist by refraining from purchasing any of the commodities in which capital is embodied.

From this it follows that what the capitalist lends is unexpended purchasing power, an unforeclosed claim on things in general. The only proper conception of capital is therefore that it is an aggregate or flow, according to the aspect in which we consider it, of unexpended purchasing power,—unexpended, that is, by the capitalist "as such,"—or, in other words, an aggregate or flow of unforeclosed claims on valuable things in general. It is only by a metaphor that capital in any sense of the term can be said to earn interest. It is the capitalist who earns interest by refraining, just as the laborer earns wages by laboring, the landlord or appropriator rent by allowing others to utilize his special facilities, and the enterpriser profit by retaining. Matter cannot earn: earning is possible only to intelligent beings acting with a purpose.

Now it seems, to me at least, that this conception of capital is just what Professors Clark, Fetter, and Fisher (who, I notice, are being classed together as the "new economists") have been feeling for. Intuitively dissatisfied with the old concept which identified it with "capital goods," they have sought to amend it by the inductive or empirical process which I have criticised in my recent book. They got no further than they did because their refusal to accept the assumption of responsibility as the distinguishing and fundamental peculiarity of the enterpriser's function makes it impossible to discriminate interest from other forms of income. The concept of capital I

am here advocating is not a development of their ideas, altho it seems to be the goal towards which they were tending. I was familiar of course with Clark's distinction between "capital goods" and what he called "true capital," but I am not aware that it consciously influenced the development of my own concept. The recent works of Fetter and Fisher I had not read until after my own book was written. My own conception was obtained deductively in accordance with the principles of deductive classification to which I have called attention in that book.

Now, if mine is the true concept of capital, "capital" has nothing at all to do with "capital goods" so far as the capitalist himself is concerned and so far as it is the earner of the income called interest. This concept is not open to a single one of the criticisms which Böhm-Bawerk applies to Clark's conception, and also, by implication, to those of Fetter and Fisher. There is no time or space left to show this in detail; but that surely is too evident to be necessary. Somewhat curiously, if the concept is accepted as correct, it shows that, while neither party to the controversy has proved his case, the intuitions of both were true. Clark's intuition is that interest cannot be explained in connection with "capital goods," and Böhm-Bawerk's is that "time" is the essential thing in the problem of interest. According to my conception it is the possibility of establishing "relations of time" that the capitalist furnishes to the enterpriser, and it is literally "relations of time" that earn interest.

Do not the difficulties with which economists are struggling, not only those relating to capital and interest, but also those relating to the two other factors and their incomes and functions, arise from their so persistently ignoring the theoretic importance of the fourth factor—enterprise—and its function? Elsewhere I have endeavored to show that this factor stands on an entirely different footing from the others. While it belongs with them to the same genus (sharers of income), it is not a member of the sub-genus, means of production, but belongs to the

co-sub-genus, purpose of production, of which it is the only member. The purpose of every human thought or action, individualistic, social, or economic, of every volition, is betterment. But betterment is the difference between cost and result, and this difference is necessarily an unpre-determined residue, which is the definition of profit. Their propelling motive is surely the best point of view for studying economic activities. When we seek therefore to learn just what the enterpriser requires in order to obtain the product, the true theory of the factors and their functions unrolls itself. He must effect changes in the form and place of material things. The physical force to do this is supplied by manual labor, and the intelligence or management which guides this force by mental or psychical labor; and those who sell him these rearrange-ments of matter and of ideas earn wages. Secondly, he must have the ability to preserve the changes labor effects until the products in which the changes are embodied are sold, or while they are being utilized as facilities. This ability is furnished by refraining from consumption,—by the refusal of some one to exercise the purchasing power he commands. It is simply this refraining which is the function of the capitalist, and by which interest is earned by the capitalist. Retaining is an incident of the function of the enterpriser, and has nothing to do with interest. The problem of capital and interest cannot be solved from the standpoint of investment, which is that not only of Böhm-Bawerk, but also of Clark, Fetter, and Fisher. Investments are made by the enterprisers and not by the capitalists, and have absolutely nothing directly to do with the problem of interest, and nothing indirectly except that the enterpriser will not make investments that do not promise a satisfactory profit after interest cost is satis-fied. Investment bears exactly the same relation to interest that it does to wages,—to it both are costs. Wages are paid to induce laborers to do what they had rather not do: interest is paid to capitalists to induce them to refrain from doing what they had rather do. The only

further important theoretic difference between wages and interest is that the thing the laborer is induced to do is a specific thing, whereas the thing which the capitalist is induced not to do is not specific. Doing must always be objective,—have a specific thing to deal with. Not doing may be subjective and relate to no specific thing, but only to things in general. It is for this reason that wages vary in accordance with the specific thing accomplished, whereas the rate of interest varies only from general causes. The trouble with the problem of capital and interest has been that economists have insisted upon investigating it from the standpoint of retaining instead of from the standpoint of refraining, when they have not treated it from both standpoints at once without recognizing any difference between them. This is inevitable so long as it is denied that ownership or retaining, with its attendant risks and responsibilities, is the very essence of the enterpriser's function. The problem of capital and interest will never be settled by any one who persists in regarding profit, with Fetter, as the "wages of management," or, with Clark, as an income supplementary to interest; or by those who, in common with the great body of economists, define functions in terms of their factors instead of factors in terms of their functions.

FREDERICK B. HAWLEY.

THE CHICAGO STREET RAILWAYS: A SUPPLEMENTARY NOTE.

SINCE the article on the Street Railway Question in Chicago was published in this Journal,¹ the application and the results of the "settlement ordinances" approved in April, 1907, have presented some matters of public interest, which are the occasion for this supplementary note.

The Chicago City Railway Company, operating on the south side of the city, promptly accepted the ordinance applying to its lines; and, under the terms of the ordinance, it became effective from the first of the preceding February. The work of rehabilitation and the improvement of the service were at once actively undertaken. By the end of the year 1907, 150 new "pay-as-you-enter" cars had been put in operation, and as many more had been purchased, fulfilling the requirements of the ordinance for new cars for a period of three years. During the same time thirty-nine and one-half miles of track had been reconstructed, of which about ten miles was in place of cable tracks removed.

Financial results are also very satisfactory, both to the company and the city, as indicated by the following statistics from the President's Annual Report:²—

		11 Months to Dec., 1907.	Total for 1907.	Total for 1906.
1. Gross earnings . . .	—	\$7,562,694	\$8,195,730	\$7,871,126
2. Operating ex- penses, taxes, and renewals . . .	—	5,293,386		
3. Net earnings . . .	—	2,269,308		
4. Interest on invest- ment . . .	\$1,116,386			
Balance:				
5. 45% to company . . .	518,590			
6. 55% to city . . .	<u>633,831</u>			
7. Net income of company (4+5)		1,634,976	1,916,558	1,724,822
8. Dividends (9%) . . .	—	—	1,620,000	
9. Surplus . . .	—	—	296,558	
10. Valuation of property, Decem- ber 31, 1907, as certified by supervising engineers		—	28,168,980	

¹ For May, 1907.

² Commercial and Financial Chronicle, vol. lxxxvi, p. 544.

It will be noticed that the city received the substantial amount of \$633,831, while the company had \$518,590 net income, in addition to the interest allowed at 5 per cent. on the valuation of the plant, which enabled it to pay dividends at the same rate (9 per cent.) as for the preceding five years.

It is also worth noting that the company, the city authorities, and the public have all co-operated heartily in executing the provisions of the settlement ordinance; and all indications are for a continuous harmonious improvement in street railway conditions, as contrasted with the ten previous years of bitter strife.

Further difficulties and delays were encountered with reference to the North and West Side lines. It may be recalled that a new company—the Chicago Railways Company—had been organized to take over those lines and to operate them under the new ordinances. But, before this company could accept the ordinances, it had to secure possession of the lines; and, in order to do this, arrangements had to be made with the holders of obligations of the older companies. It was clear from the valuation placed on these lines that the outstanding obligations could not be met, and a painful process of readjustment had to be worked out. During the summer of 1907 a plan of reorganization was prepared and approved by the representatives of a majority of those holding the obligations and also by Judge Grosscup of the United States Circuit Court, under whose direction the property was being operated by the receivers. A minority interest, however, was not satisfied with this plan; and on appeal to the United States Circuit Court of Appeals it was decided that, while the proposed plan might be the best method of protecting the interests of all concerned, the minority holders could not be compelled to accept it without their consent, and that they had a right to insist on a forced sale of the property.

This decision made it evident that further time would be needed to arrange for a harmonious reorganization; and,

with some hesitation, the Chicago City Council granted an extension of time for the acceptance of the ordinances to February 1, 1908, but under the condition that in the mean time *all* the earnings of the lines over operating expenses must be applied to the betterment of the service. This condition put pressure on the conflicting interests to come to an agreement. Professor John C. Gray, of the Harvard Law School, and Judge Grosscup were selected as arbitrators to amend the plans for reorganization; and their revised plan, dated October 15, 1907, was accepted. On January 25, 1908, the Chicago Railways Company acquired possession of the property of the Chicago Union Traction at foreclosure sale, and at once accepted the ordinance, and proceeded to operate the lines under its terms, as previously set forth.

The details of the readjustment of the interests of the numerous companies and their respective bondholders are of less public interest than the conditions under which the system must be operated. But some mention of the most important features may be made. The capital stock of the new company has been issued in the nominal amount of \$100,000, and is made the subject of a trust agreement, for the issue of participation certificates in four series, which are entitled in the order of priority to dividends, if earned. New first mortgage bonds will be issued to provide funds for the work of rehabilitation, as authorized by the board of supervising engineers; and these will have a first lien on the property, rights, and franchises of the company. A consolidated mortgage consists of series A, \$15,900,000; series B, \$16,900,000; and series C, \$4,700,000; and these bonds and the participation certificates have been assigned to the holders of previous obligations in accordance with an intricate plan, based on the priority of the various outstanding claims. The total amount of the consolidated mortgage (\$37,800,000) exceeds the valuation placed on these lines (\$29,000,000); but, judging from the experience of the City Railway, there seem likely to be surplus earnings sufficient to pay interest on all the consolidated mort-

gage and probably some return to the holders of participation certificates.

With the acceptance of the settlement ordinance for the North and West Side lines, the work of reconstruction in those parts of the city will proceed actively. The operation of through lines from one section to another has already been begun, the first through line being opened on March 17 of this year.

Mayor Busse's Annual Message to the City Council of Chicago, April 13, gives the following additional facts in regard to the progress made under the settlement ordinances:—

"During 1907 the Chicago City Railway expended \$8,235,292 on reconstruction and rehabilitation, and, although the Chicago Railways Company (successor of the Union Traction Company) did not accept its ordinance until January 29, 1908, there was expended on the north and west side lines \$1,809,172, making a total expended on surface car line betterments of \$8,044,464.

"The two companies have planned to spend approximately \$15,300,000 this year on reconstruction and rehabilitation,—\$7,500,000 by the Chicago City and \$7,800,000 by the Chicago Railways Company. The Chicago City Company has made arrangements for building sixty miles of new track this year, and the Chicago Railways Company for sixty-five miles, or a total of 125 miles of new track for the year. The Chicago Railways Company has also ordered 350 new double truck cars of most modern type, and will probably increase the order to 600.

"During the first year under these ordinances the city has received in compensation under the traction ordinances \$672,369.44 from the Chicago City Railway Company and \$863,349.75 from the Chicago Railways Company, a total of \$1,535,719.19."

JOHN A. FAIRLIE.

RECENT PUBLICATIONS UPON ECONOMICS.

Chiefly published or announced since February, 1908.

An asterisk prefixed to a title indicates a second and more detailed notice of a book announced in a previous number.

I. General Works. Theory and its History.	VIII. Money, Banking and Exchange.
II. The Labor Problem.	IX. Finance and Taxation.
III. Socialism.	X. Capital and its Organization: Combinations.
IV. Land and Agrarian Problems.	XI. Economic History.
V. Population and Migration.	XII. Description of Industries and Resources.
VI. Transportation.	XIII. Statistical Theory and Practice.
VII. Foreign Trade and Colonization.	XIV. Not Classified.

I. GENERAL WORKS. THEORY AND ITS HISTORY.

Cossa (E.). L'interpretazione scientifica del mercantilismo. Messina. 1907.

DAVENPORT (H. J.). Value and Distribution: A Critical and Constructive Study. Univ. of Chicago Press. 1908. pp. 582.

[Reviews the various cost concepts of Adam Smith, Ricardo, Senior, J. S. Mill, and Cairnes, and emphasizes and applies the idea of opportunity cost as first stated by David I. Green.]

FREZOULES (P.). La théorie de la rente. Montpellier: Firmin. 1908. pp. 318.

[A thorough study of recent extensions of the rent concept in economic theory.]

JACOBY (W.). Der Streit um den Kapitalsbegriff. Seine geschichtl. Entwicklung und Versuche zu seiner Lösung. Jena: G. Fischer. 1908. pp. 122. 3 m.

[Translation by E. Unterman.]

MORIDE (P.). Le produit net des physiocrates et la plus-value de Karl Marx. Paris: Rousseau. 1908. pp. 192. 4 fr.

ONST (G.). Grundzüge der Nationalökonomie. Leipzig: C. E. Poeschel. 1908. pp. 316. 4.80 m.

[The author, formerly a banker, now docent at the Berlin Han-

delshochschule, publishes in this book the substance of popular lectures to business men.]

RÖST (B.). Die Wert- und Preis-theorie mit Berücks. ihrer dogmengeschichtlichen Entwicklung. Leipzig: Duncker & Humblot. 1908. pp. 215. 5.40 m.

STEFANI (A. de). Gli scritti monetari di Francesco Ferrara e di Angelo Messedaglia: appunti critici. Verona, Padua: Fratelli Drucker. 1908. pp. 142. 4 l.

TERSEN (John Hales, économiste anglais). Paris: J. Gamber. 8 fr.

UNSigned. Handwörterbuch der Staatswissenschaften; herausg. von Conrad, Elster, Lexis, und Loening. 1 Lieferung. Jena: G. Fischer. 1908. pp. 80. 1 m.

[The third edition of this monumental cyclopaedia begins with this instalment. It will be published in parts at 1 m.]

In Periodicals.

BELLOW (G. v.). Wirtschaftsgeschichte innerhalb der Nationalökonomie. Vierteljahrsschr. f. Soz. u. Wirtschaftsgesch. 1907. Heft 4. [Another of v. Below's bitter attacks on Schmoller.]

BENINI (R.). Una possibile crea-

zione del metodo statistico (L' *Economia politica induttiva*). *Giorn. degli Econ.*, Jan.

BILGRAM (H.). *Analysis of the Nature of Capital and Interest*. *Journ. Polit. Econ.*, March. [A criticism of Böhm-Bawerk's "positive theory," which this writer believes he has shown to be unsound.]

CARVER (T. N.). *A Suggestion for a New Economic Arithmetic*. *Econ. Journ.*, March. [This arithmetic relates to the precise combination of the productive factors bringing the greatest efficiency, and is illustrated by real and hypothetical problems. The pedagogical advantages of the method and its possible application to specific problems are noted.]

CHAPMAN (S. J.). *Laws of Increasing and Decreasing Returns in Production and Consumption*. *Econ. Journ.*, March. [A brief but careful paper on the mode of formulation of such laws.]

CONRAD (O.). *Kapitalzins*. *Jahrb. f. Nat. Oek.*, March. [Claims to give a new theory of interest.]

DALLA VOLTA (R.).⁴ *Osservazioni* sull' insegnamento dell' economia politica. *Giorn. degli Econ.*, Feb.

FORCHEIMER (K.). *Theoretisches zum unvollständigen Monopole*. *Jahrb. f. Gesetzg.*, 1908. Heft 1.

GONNER (E. C. K.). *Some Considerations about Interest*. *Econ. Journ.*, March. [On saving, its relation to interest, and its effect on general welfare.]

KÄHLER (W.). *Die Kameralwissenschaften als Unterrichtsfach an deutschen Universitäten*. *Jahrb. f. Nat. Oek.*, Feb.

SINZHEIMER (L.). *Wirtschaftliche Kämpfe der Gegenwart*. *Jahrb. f. Gesetzg.*, 1908. Heft 1. [The keen contest between buyer and seller of more significance in modern economic life than competition between producers.]

SPANN (O.). *Der logische Aufbau der Nationalökonomie und ihr Verhältniss zur Psychologie und zu den Naturwissenschaften*. *Zeitschr. f. d. ges. Staatsw.*, 1908, Heft 1.

VEBLEN (T.). *Fisher's Capital and Income*. *Polit. Sci. Quart.*, March. [An extended book review, criticising Fisher's concept of capital as unworkable.]

II. THE LABOR PROBLEM

ALDEN (Margaret). *Child Life and Labour*. London: Headley. 1908. pp. 192. 1s. 6d.
[Social Science Ser.]

BARNASCH (E.). *Die Neuerungen in der Tarifgemeinschaft der deutschen Buchdrucker*. Karlsruhe: G. Braun. 1908. pp. 81. 1.60 m.
[In *Volksw. Abhandl. der badischen Hochschulen*.]

BRAUN (Adolf). *Die Tarifverträge und die deutschen Gewerkschaften*. Stuttgart: Dietz. 1908. pp. 107. 1 m.

CARRÉARD (J.). *Les sociétés coopératives de consommation*. Paris: P. Lethielleux. 1908. pp. 301. 3 f.
[Preface by P. Leroy-Beaulieu.]

CHAPMAN (S. J.). *Work and Wages: II. Wages and Employment*. London: Longmans, Green. 1908.
[In continuation of Lord Brassey's *Work and Wages and Foreign Work and English Wages*. Highly valuable for the student of the labor problem.]

CHATELAIN (L.). *La protection internationale ouvrière*. Paris: Rousseau. 1908. pp. 243. 5 fr.

DECHESENE (L.). *L'avènement du régime syndical à Verviers*. Paris: Larose et Tenin. 1908. pp. 550. 5 fr.

DUPONT (P.). *L'assurance contre le chômage*. Paris: Giard et Brière. 1908. 3 fr.

GRABEIN (M.). *Wirtschaftliche*

und soziale Bedeutung der ländlichen Genossenschaften in Deutschland. Tübingen: H. Laupp. 1908. pp. 203. 3.60 m.

[An excellent summary as to the extent, organization, and economic, financial, and social results of this movement; designed to meet the needs of co-operators, but of value to economic students. The author is the well-known secretary of the Union of Agricultural Societies.]

KELLY (Edmond). The Elimination of the Tramp. New York: Putnam. 1908. pp. 111. \$1.

[The sub-title explains the contents: "the introduction into America of the labor colony already proved effective in Holland, Belgium, and Switzerland, with the modifications thereof necessary to adapt this system to American conditions." An excellent study, with careful detailed suggestions.]

KENNEDY (Bart.). The Hunger Line. London: T. W. Laurie. 1908. pp. 132. 1s. 6d.

KNOOP (D.). Industrial Conciliation and Arbitration. London: P. S. King. 1907. pp. 266. 3s. 6d.

LAUN (R.). Das Recht zum Gewerbebetrieb. Vienna: F. Deuticke. 1908. pp. 220. 6 m.

[In Wiener Staatsw. Studien.] MARIE (Dr.) et MEUNIER (R.). Les Vagabonds. Paris: Giard et Brière. 1908. 4 fr.

MASCURAND (A.). Les retraites ouvrières et la proposition de loi soumise au Sénat. Paris: Pedone. 1908. 3.50 fr.

MCCARTHY (Callaghan). The Causes of Poverty. London: P. S. King. 1908. pp. 118. 2s.

MILLERAND (A.). Travail et travailleurs. Paris: Fasquelle. 1908. 3.50 fr.

MOTLEY (J. M.). Apprenticeship in American Trade Unions. Baltimore: Johns Hopkins Press. 1907. pp. 122. 50 cents.

[An excellent monograph: historical and descriptive.]

NAST (M.). Des conventions collectives relatives à l'organisation du travail. Paris: Rousseau. 1908. pp. 376. 8 fr.

SEILHAC (L. de). Le lock-out d'Anvers. Paris: Rousseau. 1908. 2 fr.

SELLERS (Edith). Foreign Solutions of Poor Law Problems. London: H. Marshall. 1908. pp. 192. 2s. 6d.

THORNDIKE (A.). Zur Rechtsfähigkeit der deutschen Arbeitgebervereine. Tübingen: Laupp. 1908. pp. 392. 7.60 m.

[Historical and critical.]

VAN VOAST (Mrs. J.). The Cry of the Children. New York: Moffat Yard & Co. 1908. \$1.25.

[A study of child labor in Alabama, Georgia, and various Northern States. Introduction by Senator A. J. Beveridge.]

WATSON (A.). A Great Labour Leader: Being a Life of the Rt. Hon. Thomas Burt, M.P. London: L. Brown. 1908. pp. 328. 15s.

ZOLLA (D.). La grève, les salaires, et le contrat de travail. Paris: Giard et Brière. 1908. 3.50 fr.

In Periodicals.

BEVERIDGE (W. H.). Public Labour Exchanges in Germany. Econ. Journ., March. [An instructive account of the rapid growth of these agencies during the last decade. They do not solve the unemployed problem, but simplify it, and are indispensable to a solution.]

CRONER (J.). Die Folgen der Berliner Bauarbeiterbewegung. Jahrb. f. Nat. Oek., March.

DEARLE (N. B.). The Working of the Unemployed Act, 1905, in Relation to the Building Trade. Econ. Journ., March. [The act has not been successful, yet has thrown light on the possibility of other expedients.]

FERENCI (I.). Das Koalitionsrecht in Ungarn. Ein Beitrag zur Geschichte der Arbeiterbe-

wegung. *Archiv f. Sozialw.*, 1908, Heft 1.

FRANKENBERG (H. v.). Die Pensionsversicherung der Privatangestellten. *Archiv f. Sozialw.*, 1908, Heft 1.

GEIGEL (F.). Reichslandisches Armenwesen. *Ann. des Deutsch. Reichs*, 1908, 1.

HAAS (A.). Les grèves dans les ports européens et la situation des armateurs. *Rev. Écon. Intern.*, Jan. [Concerning the strikes in Hamburg, Rotterdam, and Antwerp.]

HUTCHINSON (James G.). Can the Working Classes save? Nineteenth Century, Feb. [They can with careful economy and the help of the co-operative societies.]

KENYON (Ruth). The Problem of the Watering-place. *Econ. Rev.*, Jan. [Treats of labor, pauperism, etc.]

LAGARDELLE (H.). Die syndikalische Bewegung in Frankreich. I. *Archiv f. Sozialw.*, 1908, Heft 1.

LANDA (M. J.). The Undercrowded East End. *Econ. Rev.*, Jan. [Calls attention to conditions in a quarter of London largely occupied by aliens.]

LOUIS (P.). Die Arbeiter-Gesetzgebung in Frankreich. *Archiv f. Sozialw.*, 1908, Heft 2.

—. La nouvelle législation ouvrière de la confédération helvétique. *Mus. Soc.*, Feb.

MACDONALD (J. R.). Arbitration Courts and Wages Boards in Australasia. *Contemp. Rev.*, March. [They are all parts of a comprehensive scheme of protectionism.]

MACROSTY (H. W.). Die Vorgeschichte des englischen Streikgesetzes von 1906. *Archiv f. Sozialw.*, 1908, Heft 2.

MARGOLIN (S.). Die wirtschaftliche Lage der jüdischen arbeitenden Klassen in Russland. *Archiv f. Sozialw.*, 1908, Heft 1.

MASTERMAN (C. F. G., M.P.). Causes and Cures of Poverty. *Albany Rev.*, Feb. [A temperate discussion, with definite suggestions of steps towards improved conditions.]

SCHWIEDLAND (E.). Der Gedanke verbindlicher Arbeiterausschüsse in Oesterreich. *Jahrb. f. Gesetzg.*, 1908, Heft 1.

SEIDEL. Das Sparkassenwesen in Oesterreich. *Ann. des Deutsch. Reichs*, 1908, 1 and 2.

SELLERS (Edith). Old-age Pensions and the "Belongingless" Poor. A Workhouse Census. *Contemp. Rev.*, Feb. [The author shows how large a proportion of the aged workhouse poor in England are without relatives or friends, and how little good a pension of 5 shillings a week would do this class.]

SPENDER (Harold). The Government and Old-age Pensions. *Contemp. Rev.*, Jan. [An article in favor of the proposal.]

STANGELAND (C. E.). The Labor War in Colorado. *Polit. Sci. Quart.*, March. [The struggle for an eight-hour day, the legislative and constitutional situation, the miners' union; the account being carried to 1908.]

SUSSEX (F. S.). Life at Factory: A Personal Experience. *Albany Rev.*, March. [An account of the hardships suffered by factory employees, based on two months' experience.]

WEILL (G.). Le syndicalisme en France. *Rev. Écon. Intern.*, Jan. [Studies the growth of trade unions in France.]

WILLIAMS (Hartley). Anti-sweating Legislation. *Westm. Rev.*, Feb. [An outline of the anti-sweating law of Victoria, Australia, as a suggestion for English legislation.]

III. SOCIALISM.

BARKER (J. Ellis). British Socialism. An Examination of its Doctrines, Policy, Aims, and Practical Proposals. London: Smith, Elder. 1908. pp. 528. 10s. 6d.

BERTRAND (L.). Histoire de la démocratie et du socialisme en Belgique depuis 1830. Tome II. Paris: Cornély. 1908. pp. 680. 6 fr.

CARPENTER (Edward) and Others. Socialism and Agriculture. London: Fifield. 1908. 12mo. 1s.

ELTEBACHER (Paul). Anarchism. London: Fifield. 1908. 12mo. pp. 332. 6s. 6d.
[Translated by Steven T. Byington.]

FORSTER (H. O. Arnold-). English Socialism of To-day: Its Teaching and its Aims Examined. London: E. Smith. 1908. 2s. 6d.

FOURNIÈRE (E.). La crise socialiste. Paris: Fasquelle. 1908. 3.50 fr.

HEADLAM (Stewart) and Others. Socialism and Religion. London: Fifield. 1908. 1s.

HINDE (W. A.). American Communities and Co-operative Colonies. Chicago: C. H. Kerr & Co. 1908. pp. 608.
[A "second revision" of this useful work, with illustrations.]

HITCH (Marcus). Goethe's Faust. A Fragment of Socialist Criticism. Chicago: C. H. Kerr Co. 1908. pp. 127.

HUNTER (Robert). Socialists at Work. New York: Macmillan Co. 1908. pp. 363.
[An account of socialism and socialists as seen by the author in Germany, Italy, France, England, Belgium. Each of these countries has a chapter; a supplementary chapter (by C. Lapworth) takes up other countries; and there are chapters on Program, Social Reform, Art and Literature, the International.

Good portraits of prominent socialists serve as illustrations.]

LIEBNECHT (W.). Karl Marx. Biographical Memoirs. Chicago: Charles H. Kerr Co. 1908. pp. 181.

LOCKWOOD (G. B.). The New Harmony Movement. New York: D. Appleton: 1907. pp. 404.
[An excellent historical account of this noted experiment.]

MICHELS (R.). Il proletariato e la borghesia nel movimento socialista italiano: saggio di scienza sociografico-politica. Turin: Fratelli Bocca. 1908. 16mo. pp. 396. 4 l.

SOMBART (W.). Sozialismus und soziale Bewegung im 19 Jahrhundert. Vermehrte Ausgabe. Jena: Fischer. 1908. pp. 405. 2.50 m.
[This well-known volume is now in its sixth edition.]

TUGAN-BARANOWSKY. Der moderne Sozialismus in seiner geschichtl. Entwicklung. Dresden: O. V. Böhmer. 1908. 4 m.
[Announced.]

VILLIERS (Brougham). The Socialist Movement in England. London: Unwin. 1908. pp. 354. 10s. 6d.

WEBB (Sidney) and Others. The Basis and Policy of Socialism. London: Fifield. 1908. 12mo. 1s.
—. Socialism and Individualism. London: Fifield. 1908. 12mo. 1s.

WELLS (H. G.). New Worlds for Old. New York: Macmillan. 1908. pp. 333.
[An eloquent statement of socialism, exposing vulgar misconceptions, and resting the case on the spread of good will and the elevation of intelligence. The later chapters have instructive comments on Marxism, the Fabians, and political organization.]

In Periodicals.

BLATCHFORD (Robert). A Socialist's Answer to Dr. Crosier's Challenge. *Fortn. Rev.*, Feb. [Frankly renounces any claim to a theory of justice and bases his socialism upon "humanitarianism."]

CORNELISSEN (C.). *Ueber die Evolution des Anarchismus.* *Archiv f. Sozialw.*, 1908, Heft 2.

CROZIER (Dr. J. Beattie). A Challenge to Socialism. *Fortn. Rev.*, March. [Continuation of a discussion of Socialism, running in successive numbers of the *Fortn. Rev.*.]

GRAY (B. K.). Professor Abbe's New Theory of Industry. *Albany Rev.*, Jan. [A social conception, which Abbe was able to embody on a small scale.]

HOARE (H. W.). The Impotence of Socialism. *Nineteenth Century*, Feb.

HYNDMAN (H. M.). The Red Flag

of International Socialism. *Nat. Rev.*, March. [An attempt to overcome the so-called "conspiracy of silence."]

MACDONALD (J. Ramsay). The Impotence of Socialism. A Reply. *Nineteenth Century*, March. [An answer to the article by H. W. Hoare in the February number of the same periodical.]

PENTY (Arthur J.). The Fallacies of Collectivism. *Albany Rev.*, Jan. ["Not the nationalisation of industry, but the transference of the control of industry back from the hands of the financier to those of the craftsman must be the aim of the social reformer."]

SOMBART (W.). *Karl Marx und die soziale Wissenschaft.* Zum 25. Todestag (14 März, 1883). *Archiv f. Sozialw.*, 1908, Heft 2.

TÖNNIES (F.). *Ethik und Sozialismus.* I. *Archiv f. Sozialw.*, 1908, Heft 1.

UNSigned. The Fallacies of Socialism. *Edinburgh Rev.*, Jan.

IV. LAND AND AGRARIAN PROBLEM.

BREDT (J. V.). *Nationalökonomie des Bodens.* Berlin: Bruer & Co. 1908. pp. 141. 2.50 m.
[The author is professor of chemistry at the Technological School of Aachen.]

BRINKMANN (Th.). *Die dänische Landwirtschaft und ihre Entwicklung unter dem Einfluss der internationalen Konkurrenz.* Jena: Fischer. 1908. 5 m.

BUTTERFIELD (K. L.). *Chapters in Rural Progress.* Chicago: Univ. of Chicago Press. 1908. pp. 251. \$1.
[An excellent work. Attempts to present the more significant phases of the rural problem and to describe some of the agencies at work in solving it.]

CHANCIN (E.). *Viticulture moderne.* Paris: Hachette. 1908. 16mo. pp. 332. 3 fr.

LAMBERT (Em.). *L'industrie agro-* ricole et l'industrie des transports. Paris: Giard et Brière. 1908. 3.50 fr.

In Periodicals.

AUER (von). *Die Familienfideikomisse, ihre rechtliche, wirtschaftliche und politische Bedeutung für Bayern.* *Jahrb. f. Gesetzg.*, 1908, Heft 1.

BOGART (E.-L.). Farm Ownership in the United States. *Journ. Polit. Econ.*, April. [A good concise article, maintaining that there is no ground for uneasiness in the apparent increase of tenant farming.]

BORCHARDT (F.). *Verschuldung und Entschuldung der Landwirtschaft.* *Jahrb. f. Gesetzg.*, 1908, Heft 1.

BRANDT (B.). *Die Organisation und die Grenzen der landschaft-*

lichen Agrarpolitik in Russland. *Zeitschr. f. d. ges. Staatsw.*, 1908, Heft 1.

LAIR (M.). Le mouvement syndical dans l'agriculture française. *Rev. Econ. Intern.*, Jan. [Co-operative production and trade in French agriculture.]

LEVY (H.). Die sozial-rechtliche Regelung des ländlichen Grundbesitzes in England nach der Agrarreform von 1907. *Archiv f. Sozialw.*, 1908, Heft 1.

NEWMAN (A. E. T.). Small Holdings. *Albany Rev.*, Jan.

PANTALEONI (M.). Parere di un "pratico" sull' istituto internazionale di agricoltura. *Giorn. degli Econ.*, Feb. [Gives the views of John H. Hubback, a leading grain-merchant of Liverpool, on the International Agricultural Institute.]

STENGEL (K. von). La question foncière et les sociétés concessionnaires dans les colonies allemandes. *Rev. Econ. Intern.*, March. [The regulation of land acquisition in the German colonies.]

VIRELLI (F.). Il costo di produzione del grano in Italia. *Giorn. degli Econ.*, March. [A valuable article.]

WRIGHT (Harold O. S.). The Land and the Nation. *Westm. Rev.*, Feb. [An argument for land nationalization.]

UNSigned. The Agricultural Position of the United Kingdom. *Edinburgh Rev.*, Jan. [A presentation of agricultural statistics.]

V. POPULATION AND MIGRATION.

In Periodicals.

BENEDUCE (A.). Della natalità e della fecondità. *Giorn. degli Econ.*, Feb.

CAPUTO (L. A.). Di alcune quistioni economiche della Calabria. L'influenza dell'emigrazione sui costumi. *Giorn. degli Econ.*, March. [Emphasizes beneficial result of emigration.]

FORNASARI (E.). Sulla distribuzione della popolazione intorno ai centri. *Giorn. degli Econ.*, Feb.

HAACKE (H.). Der Bevölkerungsaustausch zwischen Deutschland und der Schweiz. *Jahrb. f. Nat. Oek.*, March.

KUCZYNSKI (R.). Zur Statistik der Fruchtbarkeit. *Jahrb. f. Nat. Oek.*, Feb.

VI. TRANSPORTATION.

DAGGETT (Stuart). Railroad Re-organization. Boston: Houghton, Mifflin. 1908. pp. 386. \$2. [Fourth volume in the Harvard Economic Studies.]

DUSSOL (A.). Les grandes compagnies de navigation et les chantiers de constructions maritimes en Allemagne. Première partie. Paris: Pedone. 1908. 12.50 fr.

HAARMAN (H. J.). Die ökonomische Bedeutung der Technik in Seeschifffahrt. Leipzig: Klinkhardt. 1908. pp. 107. 2 m. [A careful study.]

NOBLE (E.). The Grain Carriers. London: W. Blackwood. 1908. pp. 322. 6s.

In Periodicals.

DIX (A.). Afrikanische Binnenschifffahrt. *Zeitschr. f. d. ges. Staatsw.*, 1908, Heft 1. [With special reference to the German colonies.]

EDWARDS (William Ben.). The Nationalization of Railways. An Object-lesson from the Cape. Nineteenth Century, March. [Argues that nationalization would overload Parliament with trivial matters, would benefit

railway servants little or not at all, and would give the public poorer service at a higher price.] FAGAN (J. O.). *Confessions of a Railroad Signal Man*. I., II., and III. Atlantic, Jan., Feb., April.

FENOLIO (M.). *Le ferrovie in progetto per la congiuntione della Svizzera orientale coll' Italia*. Riforma Soc., Jan.-Feb.

MOODY (John). *The Pennsylvania System*. Moody's Mag., March. [The third of a series of articles on The Romance of the Railways.]

OSBORNE (T. M.). *The Public Service Commissions Law of New York*. Atlantic, April. [Descriptive.]

ROBINSON (M. H.). *The Legal, Economic, and Accounting Difficulties Involved in the Judicial Determination of Passenger Rates*. Yale Rev., Feb. [A careful study, using the Wisconsin data for illustration, and analyzing earnings and expenses in detail.]

ROOSEVELT (Theodore) and Others. *Our National Inland Waterways Policy*. Ann. Amer. Acad. Pol. and Soc. Sci., Jan. [President Roosevelt's Nashville speech, followed by a large number of brief articles on various special waterway schemes.]

TREVISONNO (N.). *Il deficit delle ferrovie statali*. Giorn. degli Econ., Feb. ["The present heavy and bureaucratic organization of the [Italian] State railways promises nothing but deficits."]

VII. FOREIGN TRADE

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X. CAPITAL AND ITS ORGANIZATION: COMBINATIONS.

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